# Gas Journal

AUGUST 26, 1936

Vol. 215 88th Year No. 3823

# Editorial Notes

## Need for Organized Coke Marketing

THE urgent necessity for organizing the Gas Industry's coke business by the setting up of central marketing schemes has been stressed not infrequently in these columns in recent times; and we make no apology for drawing attention to the matter once again, if only with a view to convincing those who are as yet unconverted to the advantages which must accrue to all concerned by the adoption of such a plan. Competition difficulties can, to a very considerable extent, be solved by the formation of district coke associations, and it is hardly necessary to refer by way of evidence for this statement to the record of the London and Counties Coke Association, whose various activities during nearly five years of useful existence have quite transformed the outlook on coke sales of its members and, indeed, of the whole Industry. Local conditions necessarily vary to a greater or less extent in different districts; but in no area, we suggest, are the circumstances such that the formation of an organization of this nature would not improve the coke market generally.

It is generally known that district schemes on similar lines to that operating so successfully in London and the home counties are being discussed in the provinces; but lack of definite news leads one to suspect that the promoters are meeting with a certain amount of—if not actual opposition—at least complacency among gas undertakings. It cannot be too strongly emphasized that undertakings who regard themselves as self-sufficient in regard to their coke marketing are living dangerously. Matters may be going along very well for them for the present—but to those who are best qualified to read the coke position generally in this country there can be no doubt that there are exceedingly difficult times ahead unless we are properly prepared.

By reason of the enormous activities of the steel industry to-day, the demand for furnace coke for the time being exceeds the capacity of the coke ovens which are its natural source of supply. Thus, some $3\frac{1}{4}$ million tons of furnace coke, previously competing with gas coke in the domestic and small industrial market, has largely been withdrawn to fill the needs of the steel industry. And still there is hardly enough. Very pleasant for the Gas Industry, it will be thought; quite—for the moment. But to meet the demands arising from the present unprecedented activity of the steel industry, the coke oven interests are naturally increasing their productive capacity. Nor, we suggest, will they have any desire to abandon the domestic market which they have supplied during recent years. One has, therefore, little difficulty in visualizing the position if, in the course of time, there should be a slackening in the demand for coke by the steel industry, or when the production from new coke oven plant now being installed begins to be felt. Then the surplus coke would return to the domestic and industrial market, and if the position is not safeguarded in the meantime by some means or other, the stability of the general coke market will be considerably upset. It seems obvious that some form of organization—district or national—is an urgent necessity.

The only way the Industry can protect its coke sales against this potential danger is by consolidation at the present juncture. The London and Counties Coke Association have already passed through a period of fuel slump in 1934-35, when they not only succeeded in maintaining revenue but actually the sales of their members increased—indicating thereby the value of co-ordination to meet conditions of this character. When coke oven production increases, as it certainly will, greater difficulty will be experienced in the coke market throughout the country, and only by the formation of protective organizations shall we be able adequately to safeguard our coke markets.

## Preparing in Advance

As we see the position, co-ordination in the manner suggested would constitute the very best possible preparation of our markets in advance; and this would seem to be particularly necessary in the North, where the position is much more vulnerable. Here the coke oven interests have, in fact, already started to organize themselves, with the same object in view, by the formation of the Coke Producers' Federation. As a further step, the Gas Industry's district coke associations, once formed, could well consider the advantages of co-ordination through one centre; and we believe that the experience which the London body has already gained would be invaluable in carrying out such further organization. It has, of course, given assurance of its help and advice to any district considering the problem from the local point of view for a start.

As we have remarked, there is probably little actual opposition to the scheme in principle; but there still exists complacency in the provinces, especially where

larger undertakings have a virtual monopoly of the local coke market, or else consider that such agreements as they may have with local distributors are adequate to protect their future interests. In view of the facts, we cannot help feeling that, satisfactory as the position may be for the time being, and even looking for a year or two ahead, the policy of sitting tight is a short-sighted and mistaken one. Moreover, the abstention of individual undertakings is a barrier to the formation of a scheme which we are certain is in the interests of the Industry as a whole; for, to be effective, district associations must essentially be all-embracing in character.

The whole question of the selling of coke is, of course, inextricably bound up with the national fuel problem. Its study on intelligent lines is obviously essential to the proper allocation of the various available fuels to the applications for which they are best suited. For this reason, as well as in the interests of the individual gas undertaking, we would again emphasize the necessity of educating salesmen to sell coke as they are educated to sell gas. Just as the B.C.G.A. Salesmen's Circles were formed to assist those on the gas side, so has a Coke Salesmen's Circle been instituted within the area of the London and Counties Coke Association, and coke salesmen have derived considerable benefit from attending its meetings, the proceedings of which are reported from time to time in the columns of the "JOURNAL." The old "take it or leave it" method of selling coke is as futile as such an attitude would be in the case of gas. We must now say to our coke customers: "Here is the right fuel; here is the right appliance for your purpose; and this is the correct way to use them."

There is as much intelligence required in the selling of coke as in the selling of gas; but the energies of the Industry are not always proportionately divided between the two fuels. Yet it would seem that for many years to come there is going to be a demand for solid fuel in this country; and the slow but steady education of the public to a realization of the need for a cleaner atmosphere in our cities must lead to a greater demand than ever for smokeless gas coke.

## Coke in Agriculture

THERE are, of course, certain operations for which furnace coke is more suitable; and coincident with the enormous growth of the domestic gas coke market the London and Counties Coke Association are taking steps to develop a number of further commercial and industrial uses with a view to absorbing the available furnace coke in the home counties. This is, moreover, paving the way for the future influx of the greater quantities which we have already foreshadowed; ready markets are thus being provided so that domestic sales will not be upset.

Among recent applications may be mentioned in passing one or two important outlets in the agricultural field. Immense possibilities for development lie in the latest scheme for providing winter food for cattle. Instead of the usual hay-making process we have grass artificially dried in coke-fired ovens, resulting in a food which is stated to be of greater nutritive value to the animals and, incidentally, preferred by the beasts themselves. It is understood that every ton of grass so treated requires half a ton of coke and makes possible the feeding of cattle at £4 per ton instead of £9 per ton for artificial foodstuffs. A summer like the one through which we have been passing provides sufficient evidence of the value of such a system to farmers, many of whom, as a direct result of the disastrous weather conditions, are facing a serious shortage of winter foodstuff for their beasts. Failure of the hay crop means a heavy outlay on the part of the farmer for the provision of a substitute, and not a few will be severely hit. Already one farmer in the home counties area is successfully drying nine hundred tons of grass annually in this way. With the greater interest which has in recent times been taken in scientific farming in this country, there is no reason why this new method, providing as it does a splendid outlet for coke, should not have vast potentialities for the future. Then again there is soil warming and glasshouse heating, both of which applications for coke have been described recently in the "JOURNAL." Coke is the logical and cheapest fuel for these purposes, both of which have now been established on a commercial basis. A comparatively new application for coke is the orchard heating load—to prevent damage to fruit trees by frost. In a climate such as ours this is a very real menace to fruit growers, and few would continue to face the risk of ruin which a severe frost would entail if a reliable and economical means of safeguarding their crops were readily available. The new coke heating plant may well be developed to provide that safeguard.

These are only a few of the many applications which must be sedulously cultivated in order to make provision for absorbing the surplus furnace coke when it returns to the competitive field, thus enabling steady conditions to be maintained in the gas coke market. Such poineer work as this, as well as yeoman service on the domestic side—not to mention general publicity—is being carried on by the London and Counties Coke Association, whose efforts over several years have resulted in a logical, reasoned method of controlling the coke market of London and the home counties. The foregoing, therefore, constitute just a few of the many ways in which properly organized coke associations can assist the solid smokeless fuel market generally.

## Co-operation with the Distributor

IN the bad old days the distributors—or coal merchants, as we have been in the habit of calling them—were not only continuously at each other's throats in an endeavour to secure all the business they could in the competitive market, but they also not infrequently cut across the Gas Industry's path in the coke business. Furnace coke, neither cleaned nor graded, was regularly offered by them to the unsuspecting consumer for purposes for which such a fuel was entirely unsuited. But the London and Counties Coke Association have indicated how the distributive trade can be organized to operate for the benefit of all concerned. Every distributor of coke within the Association's area is entered on the latter's official register, which is under the direct supervision of a special staff at No. 9, Grosvenor Gardens. In this way the Association can assist in and keep an eye on all coke sales, and do a great deal towards ensuring that the product is distributed in the best possible manner and at the right price, leaving a proper margin of profit for the merchant; that the right grade of fuel is utilized for each particular purpose; and that there is no cut-throat competition to the detriment of the consumer between merchants themselves or between them and the Gas Industry.

The facts which emerge from all our thoughts on the coke situation emphasize in the first place that the time may not be far distant when competition in the coke

market will again seriously face the Gas Industry. The time to prepare the organization—whether nationally or on a district scale—to meet such a situation is now. The problems, it is true, vary very considerably in different parts of the country, but, if tackled resolutely and with unanimity, there seems no good reason why they should not be solved successfully as have those of the coke markets of London and the home counties. Far be it from us to suggest that any joint organization would remove from the individual undertaking the need for effort in its own area; but it is the co-ordination of effort and of policy which would produce the united strength which is necessary now and will become increasingly essential as time goes on. Co-ordination throughout the coal industry has been made imperative by the Government. Surely this is significant, and indicates that the Gas Industry would do well to set its coke house in order on its own initiative.

## Unused Electric Cookers

THE application of the Egham and Staines Electricity Company to Mr. Justice Bucknill, the Vacation Judge, for an injunction against the Gas Light and Coke Company is of more than usual interest to the Industry as a whole. It is the custom of the Electricity Company, in supplying cookers to certain classes of consumer, to require those consumers to enter into agreements under which they covenant not to make alterations or additions to these cookers. It has become a common practice, for reasons which are too apparent to be amplified, to attach a gas fitting to the electric cooker. The household cooking is done on the gas fixture, and the electric cooker upon which the gas fixture rests is converted into a mere table.

No doubt this practice has arisen owing to the fact that the tenants, stimulated by electrical propaganda, have ordered electric cookers and have entered into agreements regarding the hire of those cookers without due consideration of the terms which those agreements may contain. If, as is often the case, experience of the electric cooker fosters a desire for gas, the consumer finds that he has agreed not to move the electric cooker, which takes up so large an amount of space in the small kitchen that there is no room to introduce a proper gas cooker. Thus in many cases a demand has arisen for the gas attachment to the electric cooker.

The development of this practice was not, we should have imagined, too good an advertisement of the much boosted popularity of electricity among the working classes, and it is with some surprise that we learn that the Electricity Company has decided to give publicity to the practice in bringing the matter before the High Court. It is not, however, for us to try to teach our electrical friends their business.

Some allegation was made by the Electricity Company that the attachment of a gas fitting to an electrical cooker was dangerous, and there was some suggestion that somewhere (not in the Electricity Company's area of supply) there had been an explosion. Even if there has been such an explosion no details are available to indicate the cause, and many engineers will have considerable difficulty in convincing themselves that it was due to the gas attachment.

It is satisfactory to know that the learned Judge refused to grant the injunction; he stated, however, that if Counsel could satisfy him that there was any real public danger the application could be renewed. The Industry will await developments with interest.

## Gas in Canada

IN his Presidential Address to the Canadian Gas Association Mr. J. Keillor put forward a plea for revision of the standards which have governed the operations of the Canadian Gas Industry for the past seventeen years. From 1866 to 1915 manufactured gas companies in Canada were required to make gas of not less than 16 candle-power. In the latter year a 520 B.Th.U. per cu.ft. minimum standard was adopted by the Dominion Government. This obtained until 1919, when a 450 B.Th.U. minimum was substituted for the 520 B.Th.U. standard. Since that time no change has been made; as a consequence, states Mr. Keillor, the Industry has not made the progress in recent years that it should have made. He asks for the adoption of the therm system of charge and that Canadian gas undertakings should be given freedom to adopt what calorific value may appear best suited to their particular conditions.

In this connection, in these columns only a few weeks ago, we urged the desirability of the Gas Industry of this country aiming at greater uniformity not only on matters of sales policy but also in the quality—composition, specific gravity, and calorific value—of the gas made. We pointed out that a greater measure of uniformity would render possible the application of fixed nipples on appliances and would generally result in more satisfactory service. At the June Meeting of The Institution of Gas Engineers Mr. C. A. Masterman observed that the present variations in calorific value and other qualities might throw an intolerable burden on the appliance manufacturers if they were required to supply each undertaking with appliances pre-set to each particular quality; and if this is correct, he said, "the Gas Industry and the gas consumer pay a heavy price in money and in service for the liberty in manufacturing processes each undertaking can exercise." It would, we suggest, be unfortunate if the Canadian Gas Industry decided on the plan of supplying gas of widely differing quality and calorific value.

Mr. Keillor rightly emphasizes the need for greater selling effort. Aided by good advertising and efficient gas consuming equipment, there is no doubt that attractive tariffs and the willingness to contract at competitive rates for larger volume business will see a marked rise in the gas sales curve of the Canadian Gas Industry. More aggressive efforts are required to cultivate the industrial, space heating, and water heating fields. What Mr. Keillor has to say in this regard is of the utmost importance, and his advice will, we hope, be taken.

## Public Contracts

As the majority of gas companies tender from time to time for public works, it may be of interest to call attention to a statement regarding this question which was made by the Parliamentary Secretary to the Ministry of Health in the House of Commons on July 28 last. The statement was made in answer to a question of Mr. J. A. Duncan, who asked whether it was the intention of the Minister that Circular 1388 should be interpreted by Local Authorities as meaning that in considering tenders for public works the lowest tendered price must always be accepted, without regard to other factors.

The material Clause in Circular 1388 is Clause 5 of the Enclosure, which reads as follows:

> "5. A tender other than the lowest tender if payment is to be made by the Council or the highest tender if payment is to be received by the Council shall not be accepted until the Council shall have con-

sidered a written report from the appropriate officer or other person."

In reply, the Parliamentary Secretary stated that, other things being equal, acceptance of the lowest tender is a natural corollary of the system in use. Where, however, other things were not equal it was fully recognized that regard must be paid to criteria other than the tendered price. Among these other criteria the Parliamentary Secretary included efficiency and running costs, the durability of materials, freedom from the necessity for repair and attention, and suitability for the purpose in view. The Parliamentary Secretary also expressed the opinion that the qualifications and financial standing of the contractors were factors which ought to receive due weight.

It is interesting to note that Mr. D. A. Bremner, O.B.E., the Chairman of the Contracts Committee of the Federation of British Industries, in a letter addressed to the *Electrician* of Aug. 7, welcomes the statement made by the Parliamentary Secretary, and states that "It is reassuring to all who have the interests of true economy at heart that the Minister of Health, in his reply, made it clear that the acceptance of the lowest tender is not to be regarded as a rigid rule precluding the consideration of criteria other than prime cost."

There can be little doubt that the views expressed by Mr. Bremner represent those of the Federation of British Industries. Happily, the Gas Industry has nothing to fear from any fair and impartial test whether the deciding factor is to be cost or efficiency.

# OBITUARY

## Samuel B. Chandler

The death occurred suddenly in his office on Aug. 19, as a result of heart failure, of Mr. Samuel B. Chandler, Distribution Superintendent to the Tottenham and District Gas Company. He was in his fifty-second year.

Mr. Chandler was the eldest son of the late Samuel Chandler, Chairman of Kirkham, Hulett, & Chandler, Ltd. He was educated at the City of London School and received his engineering training with S. Chandler & Sons, of Kennington. He entered the service of the South Metropolitan Gas Company's Distribution Department in 1907, being subsequently appointed to organize the Sales Department of the South Suburban Gas Company in 1913. He was appointed in 1923 to the position he held at the time of his death. He was elected a member of The Institution of Gas Engineers in 1920, while he was also an Associate Member of the Institution of Mechanical Engineers, and a Member of the Institution of Heating and Ventilating Engineers. Mr. Chandler was a keen Rotarian, and was also President in 1930 of the Southgate Chamber of Commerce. He was initiated into the Evening Star Lodge in 1923.

Education and training in the Gas Industry was always a subject which Mr. Chandler had very near his heart, having been Chairman and Assessor of the Gas Supply Panel of Examiners of the Institution Education Scheme. There are many in the Industry to-day who owe their advancement to his encouragement and interest in this direction. But among those who owe him, perhaps, the deepest debt of gratitude must rank the members of the London and Southern District Junior Gas Association. From 1915 until 1920, Mr. Chandler occupied the Presidential chair, ably piloting the Association through the most critical years of its existence. Indeed, his efforts were the principal means of keeping that body together during those strenuous wartime days and of reconstructing it in the years that followed. The business qualities and untiring enthusiasm he then displayed in its interests considerably enhanced the position of the Association in the Industry, and on his relinquishing the Presidency he was made the recipient of an illuminated address expressing the members' appreciation of his great services.

We ourselves have lost a good friend in Mr. Chandler; he was a man who was always "approachable" when help or information was required; always ready to impart of his knowledge and experience to any who might benefit thereby, while his genial nature and ever helpful and sympathetic disposition endeared him to all with whom he came into contact. His death will be mourned not only by his colleagues in the Tottenham Company but also by a much wider circle of friends throughout the whole Industry, who will join with us in extending to Mrs. Chandler and his relatives heartfelt sympathy in their sudden and sad bereavement.

Following a service at his home at Wood Green, Mr. Chandler was laid to rest last Monday at Nunhead Cemetery in the presence of a considerable number of his friends and colleagues in the Gas Industry.

Among those who paid their last tribute at the graveside were Mr. Henry Woodall (Chairman of Directors), Mr. A. E. Broadberry (Director), Mr. H. C. Smith (Engineer), Mr. E. J. K. Fussell (Secretary), Mr. J. E. Ledingham (Chief Assistant Engineer), Mr. J. A. Williams (Assistant Secretary), Mr. A. M. Bell (Public Lighting Superintendent), Mr. W. Hawkyard, Mr. J. Robertson, Mr. A. E. Songest, and other members of the staff of the Tottenham and District Gas Company, Mr. Dean Chandler (South Metropolitan Gas Company), Mr. J. V. Henwood (Gas Light and Coke Company), Mr. J. C. Walker (General Secretary of the British Commercial Gas Association), Mr. Arthur Tennant and Mr. H. G. Soar (representing the London and Southern District Junior Gas Association), Mr. A. B. Potterton (Messrs. Thomas Potterton & Co., Ltd.), Mr. G. N. Behr (Ascot Gas Water Heaters, Ltd.), Mr. C. H. Kempton (Messrs. C. H. Kempton & Co., Ltd.), Mr. A. C. Frost and Mr. F. Greenfield (Messrs. George Wilson (Gas Meters), Ltd.), Mr. F. Clifton Sherriff ("GAS JOURNAL"), and many others.

### An Appreciation by Mr. Dean Chandler.

The sudden passing of my cousin, Samuel B. Chandler, came as a shock to me, for it was but on the morning of the day of his death we had spoken of some matters relating to the funeral of his brother Ernest, whose interment was to take place on the following day. In answer to my question concerning his health, S. B. had replied, "Thank you, I am not too bad, just feeling a little the strain of the recent sad event." A few hours later the news reached me over the telephone that Sam had passed "to that country from whose bourn no traveller returns." I now know that the swift hand of death was, for him, a merciful act of Providence, for had he lived a short while longer, he would have suffered greatly. His passing revealed the fact, which was known to few, that his days were strictly numbered. He himself knew of his condition, but without complaint he had determined to carry on to the inevitable end. One cannot but admire his fortitude in facing it with calm and dignified stoicism. In his case, I think it may be said that "death came to him with friendly care."

The loss of two brothers of ability and usefulness, in the prime of their manhood, is indeed sad, and serves to remind us of the uncertainty of life.

Perhaps I may be permitted to place on record something of the quality of the two comparatively young men who have been so suddenly removed. Each had striven, and I think with no small measure of success, to excel in the vocation which he had elected to pursue, and in the case of S. B. Chandler there is no question that he had given of his best to further the interests of the Industry, the welfare of which he had so much at heart. It was but a short while ago, when we were chatting of matters of mutual interest, that Sam remarked that in his view there was a great future for the Gas Industry, but in order for it to prosper the right type of young man must be encouraged to devote his energy and enthusiasm, which so great a cause demanded. He himself had frequently, perhaps all too often, burned the midnight oil, to further the interests of the Industry. It remains for others to carry on the work.

# PERSONAL

We are informed that the Directors of Messrs. Willey & Co., Ltd., have appointed Mr. N. A. PEDLER as successor to the late J. H. Roby to represent them in the Manchester Area.

* * *

Mr. ROBERT CECIL WARDELL, son of Mr. Robert Wardell, General Manager and Secretary to the Peterborough Gas Company, has obtained the B.Sc. degree in Engineering of London University. Mr. R. C. Wardell, who has been on the staff of the Peterborough Company for the past 3½ years, was formerly with Messrs. West's Gas Improvement Company, Ltd., Manchester, for 7½ years, where he first entered as an Engineering pupil, and passed through all departments—pattern making, moulding, turning, fitting, drawing office, &c. He was then transferred to the Test Plant, where he had considerable experience in carbonizing various classes of coal, and was also in the Research Laboratory run in connection with the Test Plant under Dr. Barash. He is an Associate of the Municipal College of Technology, Manchester.

* * *

We are informed that Mr. ARTHUR HAYWOOD, Chief Salesman and Fitter for the Londonderry Collieries, Ltd., was the guest on Aug. 11 at a luncheon held to mark his recent appointment as a member of the South Wales Coal Control Board set up under the new selling scheme. About 100 representatives of Coal Trade Firms on Newcastle Quayside were present.

* * *

As their representative in the Lancashire district the Vulcan Stove Company, Ltd., of Exeter, have appointed Mr. N. A. PEDLER to fill the vacancy caused by the death of Mr. J. H. Roby, who represented the firm in that district for many years. Mr. Pedler has acted on behalf of the Company for some time in the neighbouring territory.

# News in Brief

**The First Prize** in the trade exhibits class at the Penzance Carnival on Saturday, Aug. 22, was won by the Penzance Gas Company.

**For the Supply of Gas Mains**, the Stockton-on-Tees Town Council has accepted the tender of Messrs. Cochrane's Foundry, Ltd., Middlesbrough.

**Shop Heating** is the subject dealt with in the latest addition to the series "A Thousand and One Uses for Gas" published by the British Commercial Gas Association.

**A Technical Assistant** is required by the County Borough of West Bromwich Gas Department. The salary will be £250, rising to £290 per annum subject to satisfactory service.

**Candidates for the Arthur Duckham Research Fellowship**, 1936-37, are reminded that applications have to be submitted before Aug. 31, 1936, to the Hon. Secretary of the Arthur Duckham Memorial Fund, 28, Grosvenor Gardens, S.W. 1.

**For the Right to Supply** gas to residents at Carleton which was recently added to the Thornton area, the Thornton-Cleveleys Council have made a payment of £1,000 to the Poulton-le-Fylde District Council. Previously this area was supplied from Poulton.

**An Alteration of Declared Calorific Value** at Poulton-le-Fylde is announced in the current issue of the *London Gazette*. The Urban District Council give notice that they intend to supply gas of 455 B.Th.U. per cu.ft. instead of 500 B.Th.U. per cu.ft. from Dec. 1, 1936.

**The Plant to Treat** 1,200 tons of raw coal a week for the production of smokeless fuel and by-products which is now being erected at Queens Ferry, Chester, by Stellite, Ltd., is rapidly nearing completion. As will be seen in our Amalgamation and Grouping column, the Company have acquired the Mold Gas and Water Company.

**Subject to the Approval** of the Mossley and Saddleworth Gas Company, which is, as reported some weeks ago, purchasing the Mossley Corporation Gas Undertaking, the Mossley Town Council has accepted the tender of T. Coates & Co., of Bury, amounting to £4,623 for the laying of a trunk gas main from Brooksbottom (Mossley) to the Ashton-under-Lyne Gas Company's Works, a distance of approximately three miles.

**The Public Lighting of Bury** is dealt with by Mr. W. E. Greenhalgh, Superintendent of the Public Lighting Department, in his annual report, which states that there are 2,461 gas lamps in the Borough under the control of the Department and the total number of nozzles constituting these lamps is 3,270. The total number of mantles used during the year was 9,472, giving an average of 2·9 mantles per nozzle. Many experiments have been carried out during the past year with a view to increasing the efficiency of the street lighting by gas. Some of the old type lanterns are now being scrapped in favour of more lanterns of an up-to-date design, with, of course, more efficient and modern burners. Approximately £500 will be spent each year in the replacing of the old type gas lantern for lanterns of modern and more efficient design.

# Forthcoming Engagements

**Aug.**

28.—I.G.E.—Gasholder Committee at 2.30 p.m.

**Sept.**

7.—GAS COMPANIES' PROTECTION ASSOCIATION.—Committee Meeting at 3.15 p.m.

8.—N.G.C.—Meeting of the Central Executive Board.

10.—NORTH BRITISH ASSOCIATION.—Annual Meeting at Kirkintilloch.

11-15.—WOMEN'S GAS COUNCIL.—Summer School for Demonstrators at the Domestic Science College, Cardiff.

14.—I.G.E.—Research Executive Committee at 2.30 p.m. [Transferred from Sept. 1.]

16.—B.C.G.A.—Executive Committee Meeting, 11.30 a.m.; General Committee Meeting, 2.30 p.m.

24.—WALES AND MONMOUTHSHIRE ASSOCIATION.—General Meeting at Porthcawl.

25.—NORTH OF ENGLAND G.M.A.—Autumn Meeting at Middlesbrough.

**Oct.**

3-6.—B.C.G.A.—Jubilee Conference at Bath.

12.—WOMEN'S GAS COUNCIL.—Executive Committee at 11.30 a.m. Branch Secretaries meeting at 2.30 p.m.

22.—COKE OVEN MANAGERS' ASSOCIATION.—Annual Dinner at the Hotel Victoria, Northumberland Avenue, W.C. 2.

**Nov.**

3 and 4.—I.G.E.—Autumn Research Meeting.

26.—I.G.E.—Advisory Committee on Research at 2.30 p.m.

## Amalgamation and Grouping

*Gas Consolidation and Long Eaton.*

Gas Consolidation, Ltd., announce that their recent offer to the stockholders of the Long Eaton Gas Company has been accepted by a substantial majority of the stockholders of that Company.

*Stellite, Ltd., and Mold.*

Following upon their acquisition of the Connah's Quay and Hawarden Undertakings, Stellite, Ltd., of Queens Ferry, announce that they have now acquired the Mold Gas and Water Company.

*United Kingdom Debenture Stock Increased.*

The United Kingdom Gas Corporation has placed privately £200,000 3½% Debenture Stock, states the *Financial Times*. This brings the total of this class of stock up to £600,000.

The issue has been made to finance the acquisition of gas undertakings in the North. Details will be announced shortly. The issued share capital is £1,832,470.

## New Gas Showrooms at Spalding

### Opened by Mr. Ralph Halkett

"The Gas Industry has never been in a stronger or more satisfactory position than it is to-day," declared Mr. Ralph Halkett (General Manager and Secretary of the Sheffield Gas Company), speaking at Spalding (Lincs.) on Aug. 19 on the occasion of the official opening of the Urban District Gas Department's new showrooms.

There could be no doubt, he said, that gas played an important part in the life of the nation, and he saw no reason why the Industry's present strong position should not be further strengthened. These new premises reflected great credit on the Spalding Gas Department and provided concrete evidence of the progressive policy which directed the affairs of the Undertaking. The purpose of the showrooms was to give Spalding housewives the opportunity of seeing for themselves to what extent gas could be of further service to them; the premises had been erected at considerable expense for their benefit, so that they could visit them and receive courteous attention to their needs or difficulties.

The Gas Industry recognized, continued Mr. Halkett, that the women of to-day were rightly exacting in their domestic demands and were becoming expert in the organization of their homes. The old days of haphazard, dirty, and inconvenient housework had gone for good; this was an age of leisure, cleanliness, and healthfulness, and the Gas Industry could claim to have played an important part in promoting and accelerating this new and happier era of home comfort. In fact, to be fashionably up-to-date in the home they should keep themselves fully informed of the new ideas that could be seen in the showrooms.

In regard to the Spalding Gas Undertaking, Mr. Halkett remarked that during the past three years the output of gas had increased by almost 14%. In the same period their consumers had grown from 3,513 to 4,025 (approximately 11½%), while the length of mains laid had increased from 31 miles to 36 miles (approximately 16%). Furthermore, the sales of gas apparatus were also increasing rapidly, and in the last financial year they reached a total of almost £3,700, representing nearly 500 appliances. This was a remarkable achievement, said Mr. Halkett, particularly when one took into consideration the fact that Spalding was an agricultural district, whose gas consumption was not dependent upon the state of trade to such an extent as was the case in an industrial area like Sheffield.

In conclusion, Mr. Halkett said how pleased he was to be there on that occasion. He assured them that Spalding gas consumers were fortunate in having a gentleman of Mr. Demain's experience and progressive outlook in charge of their Undertaking; its future was safe in his hands. These fine new showrooms deserved, and would enjoy, the enthusiastic patronage of the people for whom they were built, and he had great pleasure in formally declaring them open; he wished them every success.

Councillor G. W. Chatterton, in proposing a vote of thanks to Mr. Halkett, remarked that the latter had come all the way to Spalding that day, at great sacrifice of his time, to give them a send-off in their new venture. To-day they could not get along without advertising, he remarked, and when advertising in this way the building had to be as central as possible in order that they might make the best use of it. Actually the new premises had been open for about a month, and in that time the turnover had exceeded all their expectations; already the business done there had amounted to some £300, and he thought this would continue and lead to greater success for the Gas Undertaking in the years to come.

Councillor M. E. Barker, in seconding the vote of thanks, recalled that in 1927 it was proposed to increase the plant at the gas-works at considerable expense by installing new carbonizing plant, purifiers, and other apparatus. To-day the town was reaping the benefit of what was then done; he thought that Spalding consumers were now getting very good service, and he joined with Mr. Halkett in saying that they had in Mr. Demain a very progressive Gas Manager. In March, 1933, they produced 92 million cu.ft. of gas, while in March last it had increased to 107 millions.

### Spalding's Gas Charges.

The Spalding Gas Department may be justifiably proud of the low gas rates they are able to offer, taking into consideration the size of the Undertaking. We give below examples of the various scales now in operation in the area.

ORDINARY METERS.

Flat rate—
4s. 5d. per 1,000 cu.ft. . . . . 11·5d. per therm
*Less* 1d. per therm discount

Water heating (ordinary and slot)—
2s. 10d. per 1,000 cu.ft. . . . . 7·39d. ,,
*Less* 10% discount.
2s. 6·5d. per 1,000 cu.ft. . . . . 6·63d. ,,

Central heating—
1s. 6d. per 1,000 cu.ft. . . . . 3·91d. ,,

Industrial—

| Annual Consumption. | Per 1,000 Cu.Ft. s. d. | Per Therm. d. | |
|---|---|---|---|
| 100,000 to 200,000 cu.ft. | 3 0 | 7·82 | |
| 201,000 to 300,000 cu.ft. | 2 10 | 7·40 | *Less* 10% discount. |
| 301,000 to 500,000 cu.ft. | 2 9 | 7·20 | |
| 501,000 to 1,000,000 cu ft. | 2 6 | 6·52 | |

SLOT METERS.

4s. 6d. per 1,000 cu.ft. . . . . 11·74d. per therm

### *Two-Part Tariff.*

The two-part tariff, which is available to consumers of gas through ordinary meters, is somewhat novel by reason of the fact that the annual standing charge takes the form of a "service rental" based not on rateable value or floor area—but on the consumers' annual consumption. After this all gas is charged out at 5d. per therm, less 10% discount, making the net price 4½d. per therm (or 1s. 8·7d. per 1,000 cu.ft.). The scale of standing charges is as follows:

| Annual Consumption. Scale in 1,000 Cu.Ft. From | To | Scale in Therms. From | To | Standing Charge. Per Annum. £ s. d. |
|---|---|---|---|---|
| 0 | 10,000 | 0 | 46 | 1 0 0 |
| 10,100 | 20,000 | 47 | 92 | 1 10 0 |
| 20,100 | 40,000 | 93 | 184 | 2 10 0 |
| 40,100 | 60,000 | 185 | 276 | 3 15 0 |
| Increasing by stages up to: | | | | |
| 750,000 | 1,000,000 | 3,451 | 4,600 | 47 0 0 |

EXAMPLE—YEARLY CONSUMPTION.

| | £ s. d. |
|---|---|
| Flat Rate— | |
| 165·6 therms (36,000 cu.ft.) at 10½d. . . . . | 7 4 10 |
| Two-Part Tariff— | |
| Standing charge . . . . . | 2 10 0 |
| 165·6 therms (36,000 cu.ft.) at 5d., *less* 10% . . . | 3 2 1 |
| | £5 12 1 |

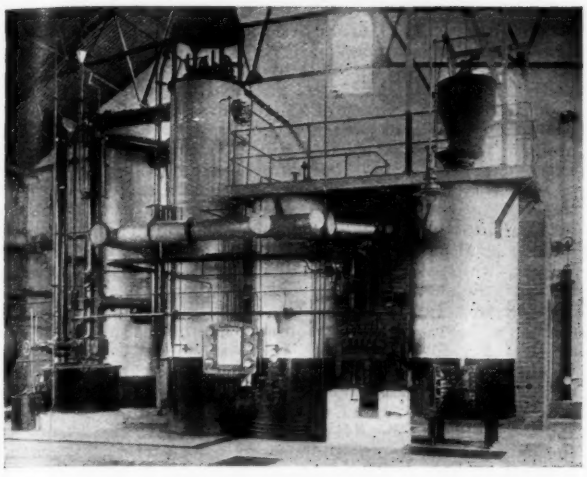
Yearly saving = £1 12s. 9d.

## Gas Journal Shewring Fund

Donations are invited to the Fund, full particulars of which were given in the "JOURNAL" for July 22. The Management of the Fund is in the hands of Messrs. F. G. Shaw (Buxton), W. W. Townsend (Colchester), and J. Bridge (Elland). All expenses having been guaranteed, the whole of the sums received will be applied, without any deduction whatsoever, to the benefit of the widow and children of Harold Shewring, by whose tragic death earlier this year they were left in distressed circumstances.

Cheques should be made payable to the "GAS JOURNAL," and crossed "Shewring Fund Account." All donations will be gratefully acknowledged by the Editor, who is Treasurer to the Fund.

# New Carburetted Water Gas Plant Inaugurated at Arbroath



On Friday last the Arbroath Town Council visited their Gas-Works to inspect the new automatically-operated carburetted water gas plant. The plant has a guaranteed daily capacity of 750,000 cu.ft. of 500 B.Th.U. gas, and is the largest of a series of a new design recently introduced by Messrs. Humphreys & Glasgow, Ltd. It incorporates many new and interesting features.

The plant, which is installed in the old horizontal retort house, comprises a water gas generator; separate carburettor and superheater in which the enriching oil gas is produced, a washer which effects the primary cooling of the gas and provides a safety hydraulic seal between the generating plant and the relief gasholder, a multitubular water-cooled condenser, and a tar separator. Steam turbine blowing plant is installed in a specially constructed sound proof building.

As is standard with all Humphreys & Glasgow modern construction, the generating plant incorporates their back-run process. All the working valves of the plant are positively controlled by the automatic operator, which, together with all gauges, instruments, controls, and safety devices, is conveniently arranged at ground floor level—a particularly important feature with automatically-operated plant which requires only occasional attention. The attendant has to ascend to the upper floor only at infrequent intervals for charging coke into the generator. All controls, gauges, valves, venting systems, &c., are grouped so as to be simultaneously in view at ground level. The whole of the plant is readily accessible for inspection and overhaul.

The automatic operator is driven through suitable reduction gearing by a small vertical steam engine, and is connected by direct drives to the various working valves. The machine is readily adjusted to any variations of gas-making cycle which may be required by changes in the coke or oil used, and a safety system of valve interlocking positively prevents the movement of valves other than in safe sequence. The attendant is immediately warned of any irregularity in operation by the sounding of a Klaxon horn and by light signals. An electric bell rings when the generator is due for charging.

One particularly interesting feature of this system of operation is the automatic proportioning of the secondary air supply to the carburettor to suit the varying combustible in the blast gases issuing from the generator. An electric pyrometer is provided to facilitate the maintenance of the correct working temperature in the fixing chambers. Levers are provided for convenient hand-working of the plant, should the automatic operator be out of action; the system of valve interlocking also safeguards hand working.

Coke is wheeled to the plant in a special rapid-charging skip which is raised by a steam hoist to the charging platform, and moved along an overhead runway to the generator. The whole operation of charging requires only a few moments. The gas leaving the condenser passes to the relief holder and also to the coal gas foul main near the inlet of the exhausters. A special gas flow regulating valve is provided for adjusting the proportion of water gas sent out.

Provision is made for the future duplication of the plant, the blast main and gas connections being provided with the necessary branches. The whole of the installation is of British manufacture and design, and most of the steel construction has been carried out in Scotland.

### The Inauguration.

The new plant was formally inaugurated in the presence of members of the Arbroath Town Council by Mrs. Law, wife of Bailie James Law (Convener of the Gas Committee), who set the automatic operator in motion.

Provost Sir William Chepel explained that this installation had been added to the gas-works plant by reason of the excessive demand upon the existing plant at certain periods.

Bailie Law referred to the value of such plant in meeting peak loads, remarking that it could be brought into operation in the space of two hours in the event of a sudden demand for gas. He paid tribute to the contractors for the efficient way in which the installation had been carried out.

Mr. W. G. Head, of Messrs. Humphreys & Glasgow, Ltd., presented a clock to Bailie and Mrs. Law as a memento of the occasion, observing that he was proud of the Arbroath installation, and he was confident that it would perform all that was expected of it, and, provision having been made for future duplication, that the plant would eventually be doubled.

Bailie Law finally invited those present to inspect the new plant and also a new compressor installation recently erected by Messrs. James Keith & Blackman Company, Ltd.

## Canadian Gas Association

### A Successful Convention

We have had a very interesting letter from Mr. George W. Allen, Secretary and Treasurer of the Canadian Gas Association, telling of the huge success of the recent Convention held in Vancouver. For some of the men in Eastern Canada the distance they had to travel was no slight one—a matter of 2,700 miles by rail, or, travelling like Mr. Allen, 3,012 miles by car.

Mr. Allen and his family travelled through the United States and over part of the territory where terrible drought has been experienced, turning fine agricultural land into veritable desert. The journey, which entailed crossing the Rocky Mountains, meant nine days' actual travel—over 300 miles a day—and one extra day due to car trouble. When gas men in this country come to London for meetings of one kind and another, let them compare their lot with their eastern Canadian confreres who attended the Vancouver Convention of the C.G.A.

## Coal Processing and By-Product Treatment

### Koppers Developments

We learn from the Koppers Coke Oven Company, Ltd., that the firm is devoting attention to the production and treatment of oils from coal.

The value of pitch is dependent upon its binding properties, and the value of the liquid distillates is enhanced by sharper fractionation. To attain these dual objects, it is necessary to avoid overheating the pitch and to improve the methods of fractionation. With these objects in view, the Koppers Company, of Essen, designed and erected for Messrs. Rütgers, of Mährisch-Ostrau, Czecho-Slovakia, a new type of tar still operated upon the pipe still principle that has been brought to a high degree of perfection in the petroleum industry. This pipe still for tar distillation is a tubular heater consisting of pipes arranged within a furnace. The tar is pumped continuously at a high velocity through pipes arranged in groups, in the first of which the tar is heated to 120° to 150° C. and the water and light oil are allowed to vaporize. In the second group of pipes, the tar is heated to 300° to 380° C. according to the desired softening point of the pitch. The thermal decomposition of tar is a reaction which occupies time; consequently, the short period during which the tar is maintained at the higher temperature does not admit of decomposition, while improving the quality of the pitch. The vapours, accompanied by a little steam, are successively condensed by passage up fractionating columns, so that products are obtained boiling within narrow ranges. The plant originally installed at Messrs. Rütgers had a capacity of 200 tons of raw tar per day, and this installation has now been extended to 400 tons per day.

Following the success of the Czecho-Slovakian installation, one of the largest tar distillation works in this country, the Beckton Works of the Gas Light and Coke Company, London, has placed with Koppers Coke Oven Company, of Sheffield, an order for the first Koppers pipe still installation to be erected in this country. This installation is designed to distil 400 tons of raw tar per day, containing 4% to 5% of water, for the production of light oil, carbolic oil, naphthalene oil fraction, benzole wash oil, anthracene oil (Grades 1 and 2), pitch with varying softening points up to 75° C., and road tar of a quality to conform with standard specifications.

The pipe still process has also been introduced by the Koppers Company for the distillation of light spirit from wash oil in connection with the recovery of benzole. In Central Germany a plant of this character has been installed in connection with the daily recovery of 75 tons of benzine obtained by stripping gas from a low-temperature distillation plant. Recently, the Röchling Iron and Steel Works, Völklingen, have placed an order with Koppers, Essen, for a pipe still plant to distil 1,200 tons of wash oil per day in connection with the recovery of benzole from coke oven gas.

The Koppers Company is closely identified with the Fischer-Tropsch process. In the year 1935, the Koppers Company, of Essen, received an order to supply the plant to produce the mixture of carbon monoxide and hydrogen (the " synthesis gases ") necessary for this process. This order comprised the whole of the plant to produce in a sufficiently pure condition the gases for the Fischer-Tropsch installation at Brabag, Ruhland, for the Braunkohle-Benzin A.G., Berlin. The first section of the Brabag plant has a capacity of 900,000 cu.ft. of synthesis gas per hour, which corresponds to a yearly production of 25,000 tons of primary products.

The Koppers plant at Brabag was put into operation in April, 1936, since when Koppers has received a further order for the extension of this installation to produce an additional 4,500,000 cu.ft. of synthesis gas per hour, for the production of which five new units will be needed. All the Brabag units manufacture the synthesis gases from brown coal briquettes.

At another plant ordered in 1935 by the Rheinpreussen Company, Homberg, the identification of the Koppers Company with the Fischer-Tropsch process has been carried a stage further. Originally, the Koppers Company had to provide the synthesis gases only, but now the arrangement has been extended so that Firma Heinrich Koppers G.m.b.H., as general contractors, have charge of the designing, and the supervision of the erection and starting of the whole of the plant for the production of liquid power fuels. This plant is to produce 30,000 tons of primary product per year, the raw materials being blast furnace coke and coke oven gas. The products will consist of motor spirit (benzine), diesel oil, soft and hard paraffin wax, and oils for the production of domestic fats, and other chemical uses.

### Coke Oven Installation.

The Koppers Company, of Sheffield, has under construction plants for the United Steel Companies and for Messrs. John Bowes & Partners. They have now secured the order for the reconstruction of 9 ovens from the Tinsley Park Colliery Company, Ltd., Nr. Sheffield. Recent Continental orders include a battery of 28 Koppers combination circulation ovens for a dry coal throughput of 650 tons per 24 hours. The Compagnie des Mines de Bruay are having an extension to their medium temperature carbonization plant of 40 Koppers continuous vertical chamber ovens; ten of these ovens are now ready for operation, and the completed vertical installation will carbonize 300 tons of highly bituminous coal per day. The Management of Leipzig Gas-Works, who some years ago installed Koppers producers to heat their existing inclined chamber ovens, have now decided to scrap those ovens, on account of age, and to install a battery of 16 Koppers combination circulation ovens (of a type similar to those in use at Beckton Gas-Works) for manufacturing gas for Leipzig. Koppers continuous vertical chamber oven installations have also been ordered by Heilbronn Gas-Works and by Stavanger Gas-Works. The Heilbronn plant consists of the extension of the existing five vertical chambers by a further two chambers, producing 400,000 cu.ft. of gas daily; in the Stavanger plant six Koppers vertical chambers will produce 775,000 cu.ft. of gas daily.

---

## Chertsey Give Addlestone Better Lighting

### Forty-Eight Columns Erected in Two Days.

The brighter and better public lighting of Addlestone was inaugurated last Friday, when Mr. J. Riggs (Vice-Chairman of the Urban Council) performed the opening ceremony at the Bank cross-roads, which is in the centre of the new gas lighting installation.

The forty-eight lighting columns which make up the new system were all erected in the remarkably short period of two days. They stretch from the new Church Hall through Station Road to Weymann's Entrance, and there are also a few in High Street and Brighton Road.

Supporting Mr. Riggs were Councillors Bowers, Caselden, and Vincent, and Mr. F. G. Matthews (Engineer and Manager, Chertsey Gas Consumers' Company), with Mr. A. Cowlard (foreman in charge of the installation).

Mr. Riggs said that in the unavoidable absence of the Chairman of the Council and the Chairman of the Highways and Lighting Committee, it was his pleasure to " turn their darkness into light," and he had great pleasure in turning on the new installation.

The system comprises forty-eight steel columns about 30 ft. high with an arm span of 6 ft., fitted with Sugg's " London " lamps. The lamps are 800 candle-power, and can easily be increased to 1,200 c.p. if necessary.

The columns were manufactured by the Bromford Tube Company and are fitted with lamps made by Messrs. Wm. Sugg and lifting gear by Messrs. Keith & Blackman Co.

---

## Women's Gas Council

### Southgate Branch.

The Southgate and District branch of the Women's Gas Council will be inaugurated on Wednesday, Sept. 9, when Miss K. M. Halpin, Organizing Secretary, will address a meeting to be held at the Southgate and District Gas Company's showrooms at Enfield West.

---

## Athletic and Social

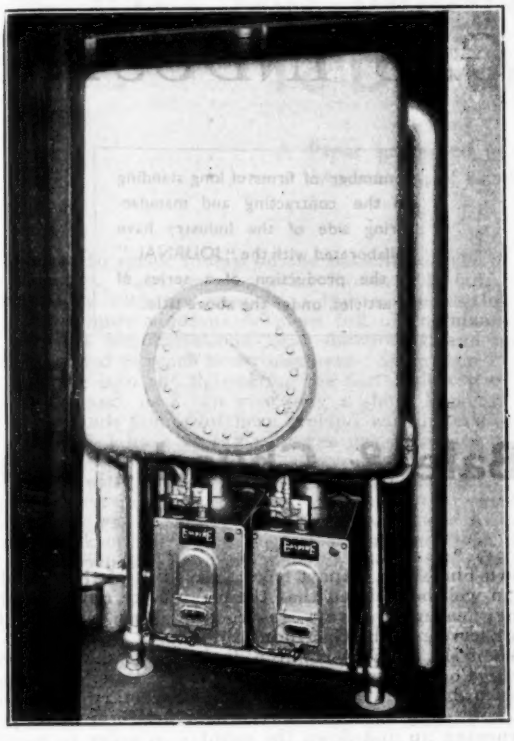
### Clayton, Son, & Co., Ltd. : Sports Association.

Messrs. Clayton, Son, & Co., Ltd., Leeds, have a very healthy and enthusiastic Sports Association. On Tuesday, Aug. 18, the Cricket Section won the Charles Wood Cup by defeating Pudsey Britannia II. The team have had a successful season so far and stand high up in the league table.

The Clayton Trophy in connection with the Golf Section was won on Friday last by Mr. W. H. Gardner, Outdoor Superintendent, who defeated Mr. H. Warwick, Pepper Road Branch, by 4 and 3.

# Gas Central Heating and Hot Water Supply

## Recent Installations of Interest



Gas Boiler Plant on Top Floor of Office Building.

It frequently seems that Thomas Potterton & Co. (Heating Engineers), Ltd., are a firm that revel in gas boiler installations that present unusual difficulties. Tell them that a job is virtually impossible, that it is encompassed with technical objections or practical stumbling blocks, and they forthwith set about it and complete the work to the entire satisfaction of all concerned.

With different designs of plant available for all manner of varying situations, this versatile firm take technical obstacles in their stride, as witness the excellent installation to which they are now putting the finishing touches in Ashley Gardens, Westminster, where eleven blocks of flats were provided with gas-heated central heating and hot water supply. We drew attention on that occasion (see "JOURNAL" for June 24 last) to the various difficulties which that particular site presented and to the manner in which Pottertons successfully surmounted them.

We had the opportunity the other day of inspecting another installation in the same district which was at first sight proclaimed to be "one of those jobs which could not economically be done by gas." But there are fortunately very few heating jobs which fall into this category; and by the adoption in this instance of a simple, yet ingenious plan Pottertons once again bore testimony to the truth of this statement.

The site is a series of seven-floor blocks of offices, Nos. 64 to 70, Victoria Street, S.W. 1, where there previously existed no hot water supply or central heating of any sort. But it was eventually realized that even in "places where people work" it is necessary to provide these primary factors of comfort if landlords of office premises are to avoid a redundance of "To Let" notices in their windows. In this particular instance the "insurmountable" difficulties lay in the fact that there was no room available for the boiler plant except on the top floor of the buildings, and also in the Metropolitan Water Board's regulations that there must not be a dead-end draw-off of a greater length than 25 ft. Indeed, Pottertons were as good as told that it could not be done. But this is how they did it.

Two No. 2 "Empire" gas boilers coupled up in series were installed on the top floor, with a 200-gallon storage tank, lagged with an asbestos compound and an intervening layer of magnesia, immediately above them. The cold feed into the storage consisted of a 2½-in. inlet from the cold cistern, 4 ft. higher on the roof, introduced at the *bottom* of the tank, in order to force the heated water to the top of the storage, whence it is drawn off to the eight lavatory basins on each floor. But it is obvious that a system such as this would have serious drawbacks. In the first place it would contravene the Water Board regulation in regard to length of dead-end draw-off to which we have already referred. Alternatively, if a flow and return circulating system were installed it is quite clear that the water simply would not circulate as it would be travelling against gravity. In any case, an inordinate quantity of cold water would have to be drawn off on the lower floors before any hot could be obtained.

A circulating system was, however, adopted, with flow return pipes covered with "Econite" sectional protection and rubberoid outer casing, painted and wired; and the pipes, varying in diameter from 1½ in. at the top to 1¼ in. at the bottom, were carried down the central well of the building with draw-offs to the wash-rooms on each floor.

At the lowest point on the system—namely, in the basement—was introduced the ingenious little device which renders the whole system practicable. Let into the circuit is a small 10 cu.ft. per hour gas boiler by John Wright & Co., Ltd., nearly 12 in. high by less diameter, and this is all that is required to keep the whole system circulating continuously, providing immediate hot water, thermostatically controlled at the main boilers to 140° F., at all the lavatory basins in the buildings, serving in the aggregate nearly 300 persons per building. The system does not, of course, always circulate in one particular direction, but according to the amount of water drawn off on one side of the building or the other.

The main boilers operate at 80 cu.ft. per hour cutting down on the thermostat to 2 cu.ft. per hour in addition to the 10 cu.ft. per hour of the subsidiary boiler in the basement. It has been found by experience that, while the main boilers are shut down overnight, it is far more economical to keep the subsidiary boiler going, enabling the main boilers to reach the required temperature in the morning in a much shorter space of time. A further advantage of this system lies, of course, in the simplicity of the flue arrangements, it only being necessary to carry the products a few feet on to the roof.

The whole installation has given the utmost satisfaction to the tenants of the offices, and furthermore has rendered the premises much more readily lettable—an important consideration from the landlord's point of view. The system is extremely economical to run, the total cost per building during the past few months having been but 12s. or so per week.

Thomas Potterton & Co., Ltd., have a number of other interesting boiler installations on hand in London at the present time.

At St. Edmund's Terrace, Regent's Park, the residence of Her Grace the Duchess of Hamilton, a large oil-fired boiler was in use for central heating and indirect hot water supply, with which serious complaints of both noise and smell occurred. The oil-fired plant has been substituted by "Rex" boilers—one for central heating and one for hot water supply. The latter works upon the "direct" principle, producing good stratification in the storage and thereby affording the advantage of quick heating.

Another installation of a special character has been carried out at Abbey Gardens Mansions adjoining Regent's Park, where electrical thermal storage existed for hot water supply in eighteen flats, besides providing water for separate bathing arrangements for twenty-two persons in connection with the garage staff. In this case the electrical elements were removed from the storage cylinder and the same storage heated upon the "direct" principle by a Potterton gas boiler installation. To meet the new requirements of the Water Board, secondary circulations had to be provided from the storage cylinder throughout the flats, which additional duty was met by the gas installation.

The secondary circulation is lagged throughout with magnesia asbestos composition, but further to economize in radiation losses the extended circulation is cut off at predetermined times at night by means of a clock in conjunction with a magnetic valve.

At Short's Gardens, off Drury Lane, an interesting example of the utility of gas for central heating occurs in the installation of a "Rex" boiler for warming two floors of the printing works, some 100 ft. long, situated above the electric power station. In this instance, a "Rex" gas boiler is placed at ground level under the main stairs, with its flue discharging overhead on the front of the building. Gas secured this load in competition with electricity in spite of the fact that electricity was so readily available.

# LONG SERVICE TO THE GAS INDUSTRY

A number of firms of long standing on the contracting and manufacturing side of the Industry have collaborated with the "JOURNAL" in the production of a series of articles, under the above title.

## Bale & Church, Ltd.

A firm with over half a century of service in the Gas Industry is Bale & Church, Ltd., of 33, St. Mary-at-Hill, E.C. 3. The business was founded in the early '80's by the late Mr. A. J. Bale under the style of Bale & Co., with offices in Newgate Street. It was for some time confined largely to the supply of gas purification material and the purchase and sale of spent oxide. During the 17 or 18 years of his control Mr. A. J. Bale became personally well known throughout the Industry.

After his death in 1901 the firm was carried on as Bale & Church by his son, Mr. A. E. Bale, and Mr. G. F. A. Church, both of whom had previously assisted in the business, and a move was made to premises in Crooked Lane, off Cannon Street. The concern became a private limited company in 1911.

While the supply of gas purification material continued, Bale & Church opened in 1910 a new department which ever since has had the closest association with the Gas Industry. The manufacture was commenced by them in that year of a preparation which was a really effective agent for the removal of carbonized grease from cooking stoves, and to this the significant name of "Kleenoff" was given. What a boon for the housewife. A cleaner was at her disposal which would really clean, and yet could be applied to her cooking stove with no trouble and then removed, taking with it all dirt and grease with equal ease. From small beginnings this part of the business of Bale & Church grew apace, and to meet rapidly increasing demands it was soon found necessary to move to larger premises at 33, St. Mary-at-Hill, the present registered office of the Company.

How substantial is the present-day demand for "Kleenoff" is evident from the fact that the yellow tins of the preparation are to be seen all over the British Empire. "Kleenoff" is not only supplied direct to Gas Companies and Departments for re-sale, but also goes in large quantities through the wholesale trade to ironmongers, grocers, and stores generally. Some little time ago Bale & Church, Ltd., had occasion to take action in the High Court to prevent the infringement of their trade mark—one of the very few cases in the Gas Industry where such a step has had to be taken. They were successful both at the trial and on an appeal, the Master of the Rolls remarking in his judgment that there was evidence that "Kleenoff" had found "an established place among the commodities which are useful." The name "Kleenoff" has now received a first-class A registration as a trade mark. It is to be noted, too, that "Kleenoff" is exempted from the provisions of the Pharmacy and Poisons Act, under the Third Schedule, Group 2, of the final Rules and Orders dated Dec. 21, 1935. It can, therefore, be sold without any restriction.

Striking advertisements relating to the use of "Kleenoff" have been prominent in recent years in the "GAS JOURNAL" and in the national and general Press. Bale & Church, Ltd., believe they were one of the first firms, if not actually the first, to use in the "GAS JOURNAL" a photographic reproduction of a girl figure showing how a product is actually used. Their policy has been always to use artistic studies, and their latest "model" will no doubt have been widely recognized as one of to-day's well-known film stars. Apart from the utility of their product, it can well be claimed that their extensive national advertising, featuring always gas cooking, has constituted no small service to the Gas Industry.

When Mr. G. F. A. Church died in 1928 the sole control of the Company passed to Mr. A. E. Bale, and shortly afterwards Mr. R. E. Bishop became Secretary and a Director. Mr. Bale now has a record behind him of 35 years' journeying up and down the country in order to maintain a personal touch with customers. Before entering his father's business, as mentioned above, he served his apprenticeship as an engineer. In this respect history is repeating itself, for his nephew, Mr. R. J. J. Bale, who joined the firm two years ago and is becoming known to many in the Industry, also went through an engineering apprenticeship, and is a graduate of the Institute of Mechanical Engineers.

During the war, Bale & Church, Ltd., like all other concerns in the Gas Industry, had to carry on with a much depleted staff, but contrived to keep their customers fully supplied. The late Mr. G. F. A. Church served on the Spent Oxide Committee of the Ministry of Munitions. Mr. E. E. Wrench, now the firm's Manager, saw war service with the City of London Yeomanry in France and Italy.

## Wallasey's Bottled Gas

### Recent Developments

The Wallasey Corporation Gas Department supplied an installation of compressed coal gas in alloy steel cylinders for use in the refreshment tent at the recent Open Golf Championship at Wallasey. The coal gas was stored at a pressure of 1,800 lb. per sq.in. in four cylinders, and continuous supplies were available to two "Dean" wash boilers, one "Jackson's" water boiler, and one "Stott" tea urn, by which arrangement unlimited supplies of hot water were available.

A similar arrangement was installed with equal success for the Royal Southern Hospital, Liverpool, on the occasion of their Summer Fête, which was held at Jericho Farm, Aigburth Vale, from July 8 to 11. In previous years, hot water was obtained from boilers heated over open fires, and the supply was unsatisfactory and irregular, whereas this year, with the "Wallasey" installation, instantaneous supplies of boiling water were always available. Nine cylinders, each containing 150 cu.ft. of Wallasey compressed coal gas, were used on this occasion.

Twelve houses and farms in the Moreton area are now taking regular supplies of compressed coal gas. These houses are equipped with modern appliances for lighting, cooking, and heating, including all enamel gas cookers with "Regulo" controllers, and the gas is supplied and measured by the provision of the usual prepayment penny slot meters. The gas cylinders and pressure reducing governor are fixed in a convenient place outside the houses where the cylinders can be easily replaced. The cost of the gas, including the loan of the above gas appliances, is at the rate of 16 cu.ft. for one penny. During the past two summers, regular supplies of bottled coal gas have been supplied to local sports clubs and beach kiosks.

# The Irish Gas Industry To-Day and To-Morrow

by
EILEEN MURPHY

A Paper presented at the Annual Meeting of the Irish Association of Gas Managers in Dublin on Aug. 11.

I propose to speak to-day on the national aspect of the Gas Industry. Last year I visited Northern Ireland, and I came away with the impression that no section of the Industry is more vigorous or more full of confidence. I saw crowded demonstrations, neat showrooms, and mains being extended to reach new consumers. Since then I have been delving into the figures for the Gas Industry in the Free State, and, as I can give only a short Paper, I am sure my friends from Northern Ireland will understand if most of what I have to say concerns gas activities in the Free State.

To begin with, I may mention that Ireland has a historical interest in the Gas Industry, Dr. Clayton, the first man to make gas in these islands, became Dean of Kildare. He used to keep the gas in pig's bladders and light it to amuse his friends. That was back in the eighteenth century before William Murdoch was dreamed of.

To-day there are gas-works in nearly fifty towns scattered all over the length and breadth of the Free State. From the national point of view, the Irish Gas Industry should be regarded as a single big business with fifty individual branches. When we look at it in this way, we begin to realize the important part the Gas Industry plays in the life of the Irish people. To make my point, I should like to give a few figures about the Free State Gas Industry. These figures are taken from Government publications, and I will let them speak for themselves.

The Free State Gas Industry has an annual turnover of just on a million pounds. Every year it pays out £327,000 in wages, and this big sum of money represents 57% of the net output. The wages go to 2,000 Irish workers—most of them married men with families. The net output per person is £300 per annum, and this figure ranks among the highest for all Irish industries.

## Not the Whole Story.

These figures are very impressive, but they do not tell the whole story. In the first place, there are very few Irish industries which return such a high proportion of their revenue as wages. Secondly, the employment given by the Gas Industry is spread out all over the country, because the gas-works operate in fifty different places. And thirdly, the gas-works give *regular* employment to their 2,000 workers. The figures of employment fluctuate very little from one season to another. Any business which gives well-paid, regular, and well-distributed work to a large number of people is an asset to the nation. But there are other points to remember in judging the value of the Gas Industry in the economic life of Ireland. If it were not for the Gas Industry, the Free State would have to import coke, tar, and other by-products which are produced by Irish gas-works to the value of nearly a quarter of a million pounds a year.

From another and more positive point of view, the Gas Industry has a special importance to-day. It can help to develop the young Irish industries that are springing up, and at the same time it can play a great part in raising the general standard of living.

Ireland is rapidly becoming an industrial country. Everyone who returns to Ireland to-day is impressed by the new factories that are being built and equipped with modern plant. Those who are planning these Irish factories have an important responsibility towards the community. They can profit by the experience of other industrial nations so as to avoid the possibility of turning any part of Ireland into an ugly, smoky black country.

In the past, when crude coal was the only practicable way of providing heat for industrial processes, every factory town was bound to be dirty and smoky. To-day the gas-works supply clean, reliable heat for every process where heat is needed. That is why the most progressive industries in America and Britain are turning over to gas as an industrial fuel. Every year the figures show a marked increase in the industrial sales of gas.

Already several Irish trades are using quantities of gas for various purposes in their workshops. The confectionery trade, which is expanding rapidly, uses gas to the value of £15,000 a year. The engineering and motor trades account every year for £6,000 worth of gas, and the printing industry in its main branches uses annually nearly £10,000 worth of gas.

These are only a few examples of the ways in which gas is helping to maintain the productive efficiency of growing Irish industries. In other countries the development of industrial activity has always resulted in an increased consumption of gas. Given a fair field and no favour, I think that the same thing will happen in Ireland. In modern conditions, a vigorous Gas Industry is an essential factor in industrial prosperity.

Industrial activity in itself is not enough unless it is accompanied by a rising standard of life. In every country to-day there is a vigorous drive to improve the living conditions, and particularly the housing conditions, of those who need it most. The housing of the people is a paramount concern of the Gas Industry. In the course of my work I have visited several well-known housing estates. After seeing some of the housing schemes in Ireland, I believe that they will stand comparison with anything that is being done in other countries.

The housing problem is not merely a question of bricks and mortar. It is a question of applying modern discoveries so as to make family life more comfortable and more pleasant. The new houses must be planned so as to cut down drudgery and give more freedom to the woman of the house. From the labour-saving point of view, a gas supply is next in importance to the water supply. Wherever a gas supply is available, new houses should have gas laid on. Irishwomen have a great name for being good housewives, and in fairness they should have the same modern equipment as the housewives of other countries.

I was talking the other day to an Irish girl who had settled in America. "The first thing that struck me in New York," she said, "was the easy life the women have there. Nearly every kitchen you go into has a gas cooker, a gas refrigerator, and lashings of hot water on tap."

## The Machine Age.

Well, the Irish Gas Industry is providing the same comforts in thousands of Irish homes to-day. Last year I inspected an all-gas house on the outskirts of Dublin, typical of many that are being built to-day. This house had gas water heating, four gas fires, one coke fire lighted by gas, a modern gas cooker, and gas lighting. Even the garage had a gas radiator. The total cost of the gas installation was £40. If the builder had not installed these gas appliances, he would have saved very little money, if any, and the house would have been much harder to sell. As a matter of fact, builders have found that houses like this are easy to sell, because they are up-to-the-minute in point of comfort and easy working. I look forward to the time when every Irishwoman will be able to have these gas comforts in her own house.

In this age of machines, science has taught us how to reduce the hours of work in factories without lowering the standard of production. The machine is replacing hand-labour. But in the home, women still drudge for hours at tasks which could be done in one-tenth of the time by modern appliances. The Gas Industry has a great part to play in freeing women from the dreariest jobs of housework.

## Competition.

I must not leave this part of the subject without a reference to competition. Some people seem to think that gas and electricity cannot flourish at the same time in the same country. The fact is that the very countries which have an abundant supply of cheap electric power are places where the Gas Industry prospers most. Take, for instance, the case of Switzerland, a country with plenty of cheap electricity but no coal mines. Yet since the last war, the Swiss Gas Industry has doubled its output. That is only one example. I could name others quite as im-

pressive. Given fair conditions of trading, the Irish Gas Industry has every prospect of rapid expansion.

I turn now to some particular aspects of gas sales. It is not usual at national meetings to discuss the problems of small undertakings, so I think you may be interested in the actual details.* I have been able to collect about two small gas companies which are consistently raising their sales.

The first instance comes from a little Welsh company with an annual output of two million cu.ft.—an output which is steadily rising. When electricity was brought to the village, the gas company passed into the ownership of a vigorous group of gasmen, who immediately set about improving the works and the service with no great outlay of capital. In eight months £600 worth of fittings were sold in this little town of 1,200 inhabitants. Cookers, wash-boilers, water-heaters, and gas irons were included in the sales. In their fight for the lighting load, the company offered to fit a burner free of charge in the kitchen or living room of every house where the tenant had installed a cooker.

Among the sales methods used to get this result were two which deserve special mention. In the first place, the main room of the local hotel was hired for demonstrations of cooking and washing by gas. Secondly, women canvassers were employed who were also able to give advice and service to housewives.

This is an example of how women can be used, even by small undertakings, to further gas sales. I should be glad to give further particulars to any manager who is interested in this development. I notice from the official figures that 53 women (ungallantly called "females") are employed by Irish gas undertakings. I cannot help feeling that the Gas Industry should be able to offer a new and interesting career to many more Irishwomen.

My second example is of a private English company with an annual make of less than five million cu.ft. When I tell you that the meadow round the gas-works is hired out for pasturing cows, you will get some idea of the character of the district. Local farmers buy all the coke, and take a good deal of the tar for proofing barns and sheds. Small as the works is, it has a neat showroom laid out by the owner's wife, and a good show of appliances is kept in stock. In my opinion it is almost impossible to exaggerate the value of a showroom, and no gas company, however small, can really afford to be without one. It is our duty to customers to show them all the ways in which gas can help them in their homes.

These are two random instances of small gas companies that are a big asset to the communities they serve, and a good property to the shareholders. In these days of big amalgamations in industry, it is worth while for investors to remember that the Gas Industry is an exception to the rule, because the smallest of gas-works can be conducted with high technical efficiency.

Before I finish, I would like to say a few words about the British Commercial Gas Association. It was in Dublin, at Leinster House itself, that co-operative gas advertising was first proposed. That was in 1907, when The Institution of Gas Engineers held its annual meeting in Dublin, to synchronize with the great International Exhibition. At that Dublin meeting Sir Francis Goodenough gave a Paper advocating national advertising to increase gas sales. As a result, The Institution of Gas Engineers took up the idea, and in 1911 the national gas advertising began. Since then the sales of gas have increased by nearly 70%. In October this year the B.C.G.A. will celebrate its Silver Jubilee at Bath. I very much hope that the Irish Gas Industry will be well represented at the meeting.

## Discussion.

Mr. J. M'NICHOLL (Cork) said that when he first heard Mrs. Murphy was to give them a Paper on the Irish Gas Industry, he felt himself wondering in what manner she was going to tackle it. It was a subject that had been dealt with on many previous occasions in papers and addresses. Sometimes it had been well done, but in other cases it would have been better had it not been done at all. He had, however, nothing but praise for the manner in which it had been dealt with that day. Mrs. Murphy's Paper was one that would be of real service to the Industry, and to those who were responsible for guiding its destinies in that country. For one who did not reside in the Free State, Mrs. Murphy had shown remarkable insight into the conditions which had to be faced there. No mere man could have written the Paper, and it was doubtful whether anyone but an Irishwoman could have risen to the occasion in the manner that she had done. The pamphlet which accompanied the Paper as an appendix was a very valuable contribution to their propaganda literature, and would, he felt sure, be in great demand. There was no indication as to where it was printed, but if it had not been printed in the Free State, he hoped, for obvious reasons, arrangements would be made for it to be reproduced there.

* Two articles on "The Advancement of Gas Service in a Country District," "GAS JOURNAL" for Nov. 6, 1935, and Dec. 25, 1935.

### The Gas Industry a Stupendous Asset.

Continuing Mr. M'Nicholl remarked that the vast majority of the people of the country had some idea of the value of the service which gas rendered—they were familiar with at least some of the needs which were catered for by gas in a manner that could not be equalled by any substitute—but very few realized what a stupendous asset the Gas Industry was to any country, and pamphlets of this character would assist them to do so. The Paper and the pamphlet told a portion of the story, and he was sure the Author would agree with him that it was only a portion. Other leaflets carrying on the tale ought to follow. He was sure they would be welcomed by the Industry, and he hoped also by the public. One thing which had been referred to was the influence of women on the Industry. Judged by the numbers directly engaged in it, this was not great, but the Industry had the advantage of women's assistance in other ways. The planning of homes was a sphere in which women's help was extremely valuable. In effect, women were saying: "We are going to have homes which can be easily worked;" and the Gas Industry was there to help them. He wished to pay his tribute to Mrs. Murphy, and to the President for having induced her to present the Paper. He proposed a hearty vote of thanks to the Author.

The PRESIDENT, on rising to second the vote of thanks, said they were extremely grateful to Mrs. Murphy for her constructive Paper. "Our brilliant countrywoman," he went on, "is the first of her charming sex to contribute to our proceedings, and right well she has 'done her task.' Last year a legal gentleman described her as an announcer from the B.B.C.! This description was apt, as she is a great propagandist of the B.C.G.A.—the broadcasting station of the Gas Industry in Britain. She is a wonderful asset to this great organization."

### The Way to Success.

Continuing, the President said he was glad that Mrs. Murphy had stressed the importance of the Gas Industry from a national and economic standpoint, and they must all hope that "the powers that be" would be more sympathetic to an Industry which possessed few equals in matters that meant most to people in Ireland. The examples of enterprising small gas-works across the water could be well followed by those in Ireland. Some of the "smaller fry" seemed to think that they had reached saturation-point, and, Micawber-like, were waiting for something to turn up. Twenty years ago in Midleton he had heard this same theory enunciated. Experience, however, had not vindicated the doleful prophecy. They just took off their coats to their work, and they could claim to be a successful small Gas Company. In spite of competition, they had shown an increase of 15% in their output during the past two years, and they sold, comparatively speaking, the cheapest gas in Ireland.

### Questions of Price.

Mr. F. J. EDMONDS (Waterford) said he would have liked to hear the views of the Author as to what a housewife would consider a fair economic price to be paid for gas consumed through slot meters, taking into account the standard of living prevailing in the Irish Free State. He was of opinion that, while they might go out and put plenty of apparatus before the customer, the main factor governing the sale of the appliances, so far as they in the Free State were concerned, would be the cost of running. It would be very helpful to them all to have at some future time a Paper from Mrs. Murphy giving them the housewife's point of view regarding the *£ s. d.* of the running of the gas appliances recommended for her use. It was useless for them to expect the highest possible degree of success unless they could supply their commodity at a price which would appeal to the housewife. He hoped they would both see and hear Mrs. Murphy a great deal in the future.

Mr. A. ROBIN (Holywood) suggested that it would avoid any possibility of misunderstanding if the title of the Paper were modified so as to show that the statistics quoted had reference to the Irish Free State, and did not embrace Northern Ireland.

Mrs. MURPHY, in reply, said that Mr. M'Nicholl had referred to the printing of the pamphlet appendix. The B.C.G.A. had had 500 copies of this printed for distribution at the meeting, and they were all in the room for those who desired them. She quite appreciated that many of the members would have liked to see Northern Ireland statistics included in the pamphlet, but she thought that a pamphlet prepared specially to deal with Northern Ireland would be still better. They were really working under a different constitution, and it was hard to combine the two. If they would like such a pamphlet as she had indicated, it would be comparatively easy to prepare it.

In referring to running costs, Mr. Edmonds had raised a most debatable point, because it was almost impossible to estimate the quantity of gas that people would be likely to use. Two next-door neighbours would make entirely different uses of their cookers, for instance. Thus reliable statistics of gas consumption in the home were hard to come by; budgets differed widely. However, they had doubtless heard of the all-gas flats at Sassoon House in London. The whole of the lighting, heating, cooking and hot water supply was by gas, and the cost averaged out at 2s. 7d. per week, including hire of appliances. This would be with the South Metropolitan Company's price for gas. These were the only all-gas flats regarding which she could quote an average; the figures varied so considerably in different cases.

# Adaptability of Chamber Ovens For "Triple Process" of Gas Manufacture

From a Paper presented at the 29th Annual Convention of the Canadian Gas Association and North-West Conference, Pacific Coast Gas Association, held at Vancouver from July 8 to 10, in which the Author refers to the adaptability of the new C.O.L. chamber oven plant at Vancouver for the triple process of manufacturing coal gas, blue gas, and carburetted water gas simultaneously.

By JOHN KIRKHOPE

(Superintendent of Manufacture to the British Columbia Electric Power and Gas Company, Vancouver)

The plant, housed in a reinforced concrete, brick panelled building, which allows of a maximum of light and ventilation, consists of two benches of 36 ovens—one with 24 ovens (four beds of six ovens each, a complete unit) and the other with 12 ovens (two beds of six ovens each, a half unit). The capacity of each oven is over 4 tons of coal, the rated capacity of the plant being 255 tons or 4½ million cu.ft. of 465 B.Th.U. gas per day when working on a 14-hour charging schedule.

This plant is the first intermittent vertical chamber oven plant to be erected in Canada and was supplied by Gas Chambers & Coke Ovens, Ltd., of London.

Two years after the plant was installed in Vancouver and used for the manufacture of coal gas and blue gas (465 B.Th.U. mixture) a new process was developed which enabled the manufacture of three gases simultaneously in the ovens—coal gas, blue gas, and carburetted water gas. This new process—the "Triple Process"—was developed by Mr. John Keillor, the Company's Gas Engineer, in 1934-35.

Prior to 1933 the Gas Utility in Vancouver was able with much effort to dispose of all residual coke, but in the last three years increasing competition from cheap sawdust, wood, coal, and imported oil has made it more difficult to dispose of the output and maintain a reasonable balance between coke and gas production.

Faced with an increasing coke stock in 1934, the rebalancing of gas and coke productions became necessary, and the methods that presented themselves were:

(*a*) A reduction in the selling price of coke.
(*b*) The manufacture of an increased amount of carburetted water gas.
(*c*) A reduction in the amount of coke produced by the oven plant.

The first method was not regarded with favour because it would considerably reduce revenue from coke sales while giving no assurance that all surplus coke would be sold.

As regards the second method, a study of the economics of water gas manufacture under conditions obtaining at Vancouver indicated that if an alternative means of holding coke stocks in check could be devised it would probably be found more economical.

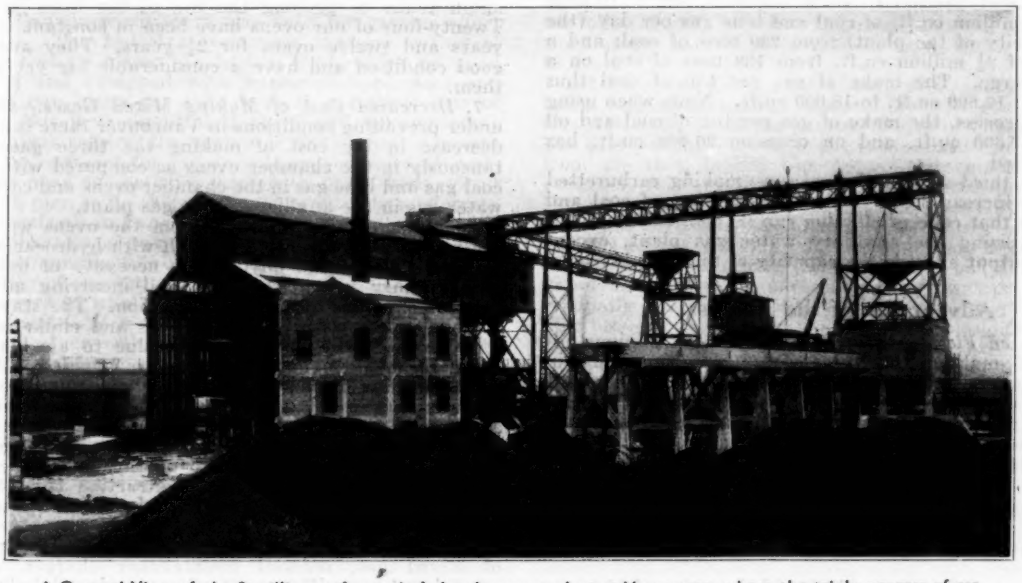
In the majority of coal gas manufacturing plants in this country coke stocks are kept in control by the gasification of surplus coke in the carburetted water gas plant. Some companies run the plant more or less steadily throughout the year, the cost of manufacture depending largely on local conditions and the extent to which the plant is used. In Vancouver the practice had been for years to make water gas intermittently for meeting peak loads only.

Consideration of the third method of holding coke stocks in check brought about the development of the triple process.

## The Triple Process.

In the ordinary two-stage process of making gas by the carbonization of coal in intermittent ovens it is well-known practice to admit steam to the bottom of the ovens when the carbonizing period is complete, utilizing some of the coke for making blue gas and thus increasing the total make of gas per ton of coal carbonized. In 1934, however, when coke stocks increased beyond reasonable limits, we decided to prolong the steaming period, make additional blue gas and endeavour to carburet this additional blue gas by spraying a liquid hydrocarbon in at the top of the oven.

At the completion of coal gas and blue gas manufacture in the ovens—*i.e.*, at the end of the second stage—there is, of course, still left in the resultant coke a large amount of available sensible heat which cannot be employed for further blue gas production without lowering the calorific value of the mixed gas. If, however, mixed gas of the same calorific value is required, enrichment of the surplus blue gas is necessary. This enrichment was attempted at Vancouver by the admission of liquid hydrocarbons to the



A General View of the 3-million cu.ft. vertical chamber oven plant at Vancouver, where the triple process of gas manufacture is being carried out. Adjoining is the coke handling and blending plant. The C.O.L. installation itself was described in our issue for Jan. 10, 1934.

ovens at the top simultaneously with the admission of steam at the bottom.

The liquid hydrocarbons sprayed on top of the hot coke in the chambers at regulated temperatures causes cracking of the hydrocarbons to take place, with consequent formation of a permanent gas of high calorific value, which gas mixes with the water gas resulting from the prolonged reaction of the steam with the hot coke. The resultant mixture of water gas and cracked gas can, within certain limits, be made to any desired calorific value between that of either constituent, by adjustment of the proportions of steam and hydrocarbon liquid admitted to the chamber.

We first experimented with tar in the ovens, and during the summer of 1934 a few ovens were equipped with means for injecting it on to the top of the hot coke charge. Small quantities of tar used for carburetting in this way indicated that this process held distinct possibilities. Experiments were continued using several grades of oil as well as tar, and the results were so satisfactory that finally the whole of the thirty-six ovens were adapted to the new process—the triple process—which has since become standard practice in our Works.

Each of the thirty-six ovens is equipped with two funnels and U-sealed delivery lines and the oil discharges into the ovens through nipples in two of the three charging port lids. Either one or both can be used to suit the proportions of oil gas required in the mixture.

Oiling of the oven charges, or the third stage of the process, is commenced when carbonization and normal steaming are completed. Steaming of the charge is continued, the blue water gas sweeping the oil gases from the upper part of the oven. To assist gasification of the oil and "fixation" of the resultant mixture of oil and blue gases the normal oven charge of 4 tons of coal has been reduced to 3·5 tons, thus exposing a greater area of heating surface to the mixed gases. The oiling period and the quantity of oil used (determined by the size of orifices situated in the delivery lines) are regulated to allow of the oil being turned off the oven at least two hours before discharge of the coke. During this latter period steaming is continued to sweep out the last traces of the oil gas. The coal charging, oiling, and steaming periods adopted depend on the quantity of gas required from the plant together with the amount of coke required for the market. These periods can be changed at will in a few minutes.

In a modern gas producing plant of the intermittent oven type the triple process of making coal gas, blue gas, and carburetted water gas can thus be carried on simultaneously, thereby controlling the coke output in a manner hitherto not attempted. The coke residue is still of good marketable quality.

Assume that a daily production of 4½ million cu.ft. is required from the oven plant. Without the oiling process a coal throughput of approximately 230 tons would be required—the coke yield would be approximately 165 tons per day. Using the triple process with 20 to 25 gallons of oil per ton of coal, approximately 170 tons of coal would be required; the coke yield in this case would be around 112 tons—*i.e.*, a reduction of 53 tons in the coke production per day.

Prior to the introduction of the triple process the thirty-six ovens had produced, when required, on a 16-hour charge, 4½ million cu.ft. of coal and blue gas per day (the rated capacity of the plant) from 230 tons of coal; and a minimum of 2½ million cu.ft. from 138 tons of coal on a 24-hour charge. The make of gas per ton of coal thus varied from 19,600 cu.ft. to 18,000 cu.ft. Now, when using the triple process, the make of gas per ton of coal and oil averages 27,600 cu.ft. and on occasion 30,000 cu.ft. has been exceeded.

Thus the third step in the process—making carburetted water gas—increases the yield of gas per ton of coal and oil used, so that coke production can be controlled at will, without utilizing the auxiliary water gas plant, except when the output exceeds the capacity of the chamber oven plant.

## Advantages of the Process.

1. *Increased Flexibility of Plant.*—The first obvious advantage of making the three gases simultaneously in chamber ovens is to increase the flexibility of the plant. It enables us to increase or decrease the yield of gas per ton of coal and oil used to within wide predetermined limits by steam and oil valve manipulation. The flexibility of the manufacturing process is such that we can manufacture:

(1) All coal gas of high B.Th.U. quality.
(2) Coal gas and blue gas by ordinary steaming to Government B.Th.U. requirements,
or
(3) Coal gas, blue gas, and an added portion of blue gas and oil gas by prolonged steaming, again to Government B.Th.U. requirements.

We can change overnight from making straight coal gas to a mixture of prescribed quality gas containing up to 40% or more of carburetted water gas and still make a good salable coke.

We can also in an emergency fill the chamber ovens with coke and when it has been brought up to the desired temperature, proceed to make carburetted water gas.

In the event of a breakdown of the coal or coke handling plant under the old condition, after a short while the quality of the gas made by the plant began to fall, but with the new process the quality can be maintained by making carburetted water gas during the breakdown.

2. *Control of Coke Production.*—The next and perhaps one of the most important advantages of the use of the triple process in chamber ovens is that it enables us to control coke production to a degree not yet possible in other types of coal gas plants. For example, in a plant the size at Vancouver (4½ million cu.ft. per day) we can regulate the throughput of coal per day to any tonnage from 230 tons down to 125 tons and the coke production from 165 tons to about 85 tons per day—a reduction of 80 tons of coke per day—making the same amount of gas, maintaining the quality of the gas the while.

This change can be effected overnight by reducing the throughput of coal, prolonging the steaming period, and making oil gas to enrich the additional blue gas by the mere manipulation of steam and oil valves.

3. *Plant Manufacturing Capacity Increased.*—By equipping our chamber ovens for oil gas manufacture and by prolonging the steaming period, the manufacturing capacity of the plant has been greatly increased while reducing the throughput of coal.

Experience with the triple process over a period of 18 months, and tests carried out last winter under ordinary operation of the plant, prove that we can increase its manufacturing capacity using the triple process to over 6 million cu.ft. per day.

4. *Reduced Capital Costs per Million Capacity.*—The manufacturing capacity having been increased from 4½ million cu.ft. using coal and steam, to over 6 million cu.ft. per day using coal, steam, and oil for a very small expenditure and without any structural alterations, the capital costs per million cu.ft. have been proportionately reduced.

5. *Reduced Maintenance Costs.*—By reducing the coal throughput of the plant from, say, 230 tons a day to 150 tons or less, a reduction in the maintenance cost of the coal handling plant is effected. Similarly the coke bus, telpher, and coke-screening plant handle a smaller amount of coke and maintenance costs are reduced here too.

6. *Increased Life of Ovens.*—In a city where it is difficult to dispose of all surplus coke, by reducing the throughput of coal in the ovens and making blue gas and more carburetted water gas, the life of the ovens is increased. This in itself is a distinct advantage. During the 18 months we have been using the triple process the throughput of coal has been reduced by some 26,800 tons while making the same total amount of gas.

The carbonizing temperatures required by the triple process are approximately 100° C. lower than those required for making a coal and blue gas mixture only, and this again tends to prolong the life of the oven brickwork. Twenty-four of our ovens have been in constant use for 3½ years and twelve ovens for 2½ years. They are still in good condition and have a considerable life yet ahead of them.

7. *Decreased Cost of Making Mixed Gases.*—Operating under prevailing conditions in Vancouver there is a marked decrease in the cost of making the three gases simultaneously in the chamber ovens as compared with making coal gas and blue gas in the chamber ovens and carburetted water gas in the auxiliary water gas plant.

To reduce coke production from the ovens we increase the production of blue gas, enrich with hydrocarbon oil in the same plant, and obviate the necessity of lighting up the auxiliary water gas plant and incurring all the attendant expenses of such an operation. The standby loss of coke in the water gas generators and clinkering costs, together with the loss of carbon due to air blasting to bring the coke to incandescence, are avoided. Wages of a second gang of men which would be required to operate the auxiliary water gas plant are not entailed, and there are no water gas plant costs, maintenance charges, supervision, &c. The only charges that have to be met when putting the triple process into operation are the cost of oil and steam and the carbon extraction from the coke charges in the ovens. No extra labour is required when the change is effected.

The triple process has reduced the manufacturing cost of mixed gas, reduced maintenance charges, and the capital cost per million cu.ft. of gas made, while increasing the normal life of the ovens and the manufacturing capacity of the plant by 30%.

# A Plea for Revised Standards For the Canadian Gas Industry

In the course of his Presidential Address to the 29th Annual Convention of the Canadian Gas Association held in Vancouver from July 8 to 10, Mr. J. Keillor put forward a strong case for the revision of the Standards which have governed the operations of the Canadian Gas Industry for the past seventeen years.

## Canadian Gas Sales Statistics.

A study of the total manufactured gas made and sold in Canada over the last few years indicates that the Industry has not made the recovery we had hoped for a year ago. It is frankly disappointing to find that Canadian Gas Companies did not make a recovery last year comparable with that of United States Gas Companies.

Sales of manufactured gas in Canada in 1935 were practically the same as in 1934. The previous four years showed a decrease of 13% from the high figure of 1930. Comparative United States total sales from the high figure of 1930 to the low one of 1933 show a decrease of about 16%. But 1935 total sales in the U.S. showed a gain of 7% over 1933. Whereas Canadian Companies as a whole have not shown any gain in the last two years, United States Companies show a gain of 7% in two years.

Following are the sales of manufactured gas in Canada in five-year periods from 1925:

| — | Year. | Thousand Cu.Ft. |
|---|---|---|
| All time high | 1925 | 13,189,000 |
| | 1930 | 17,713,477 |
| | 1935 | 15,488,362 |

The increase from 1925 to 1930, the record high year, was 34%. The decrease from 1930 to 1935 was 13%.

Figures for the first five months of this year show that about half the Companies have increased their sales slightly, the other half have recorded further declines. The total sales for the five months are a fraction of 1% more than for the similar period last year.

Sales of natural gas in Canada from 1930 to 1935 decreased by 21%, but production in 1935 compared with 1934 showed an increase of about 4%. For the five months' period this year natural gas sales are about 9% over last year. The natural gas industry shows signs of recovery, but the manufactured gas industry is barely holding its own after four years of decline.

There never has been a time in the history of the Industry in Canada when there was need for greater effort to sell gas. The Industry recognizes that promotion of sales is one of its major problems. That, aided by good advertising and equipped with improved appliances and cheap gas, can bring gas sales back to a normal rate of increase. But it is doubtful if there will be any great advance in gas sales in the next year or two unless we are prepared to contract for larger volume gas sales at competitive or near competitive rates with other fuels. And if we are to plan to do this we should prepare to modernize the gas standards in Canada, which in turn will encourage greater utilization of surplus manufacturing plant capacities and the manufacture of a new gas.

New forms of competition have retarded gas sales in the last few years in what we used to regard our almost exclusive markets. It is therefore absolutely necessary that we cultivate other outlets in the industrial and space heating fields if we are to regain our former position. To do this calls for more aggressive sales effort in these branches of the business, while not neglecting the domestic side. Trained salesmen are necessary because we are in competition with fuels that offer the user a cheap alternative to gas. The Gas Industry in Canada is undoubtedly fighting for its existence and will need all the leadership in sales development it can command.

Manufacturers of gas appliances are aiding in this effort. They have effected again this year marked improvements in design of appliances. They have increased thermal efficiency of burners, all of which assists sales promotion. In the important work of testing and approving appliances, of encouraging increased thermal efficiency of gas burning equipment, the American Gas Association's Testing Laboratories have done an incalculable amount of good. In a few years they have purged the gas companies' showrooms of inefficient appliances. They are slowly but surely purging the homes and factories of North America of inefficient, unsuitable burners and equipment.

## Canadian Government Gas Standards.

Gas standards is a subject which in my opinion is of vital importance to the Gas Industry in Canada at the present time, and, if I may say so, the Gas Industry in the U.S. as well. Gas standards have an important bearing on the cost of manufacturing gas, the price at which it is sold, and on gas sales. Modernized standards may provide the Industry with a needed stimulus. Revised gas standards have been a panacea for the Gas Industry's ills in the past.

I would remind you that the quality or kind of the gas prescribed by law has not changed in Canada since 1919—seventeen years ago. That was the year the last major change was made in the Dominion Government gas standards.

New forms of competition came into being and were developed in not much more than 17 years. But there has been no change during that time in the quality or composition of the gas supplied—no modernization of the gas standards.

Has the technique of gas manufacture in Canada kept pace with the requirements of the Industry, with the improvements in appliances? Have we changed the constituent properties of the product so that maximum thermal efficiency may be obtained from the improved appliances? Is the composition of the gas we manufacture and sell due for a change? Can it be manufactured and delivered to our consumers in more efficient and cheaper form?

Are we going to continue indefinitely in Canada making the quality of gas we are making now, and sell it at so much per hundred cu.ft., or are we in future going to make the quality of gas that can be made most economically from local raw materials in any part of the country and sell it on a B.Th.U. content basis at so much per therm? Should we follow British practice and modernize our Gas Regulations as we have done in Canada three times in the past 25 years?

Let me recall briefly the history of Canadian gas standards respecting quality of manufactured gas. The first Gas Act was put on the Statute Books of Canada in 1886. The first Gas Act—a candle-power standard—was patterned from the then British Gas Acts. Subsequent Acts progressively followed to a large extent British practice until 1919, but there we rest. From 1886 until 1915 manufactured gas companies in Canada were required to make and sell gas of not less than 16 candle-power, a photometric standard. It was during this period that gas cooking made its advent. Then incandescent lighting was perfected and gradually displaced less efficient types of gas lighting. This brought about a change in the gas standards in 1915. The Canadian Gas Association in that year was instrumental in getting the Dominion Government to substitute for the old-fashioned 16 candle-power standard a 520 B.Th.U. minimum standard. In 1919 the Canadian Gas Association again made representations to the Government in the interest of progress to amend the regulations, and that same year a 450 B.Th.U. minimum standard was substituted for the 520 B.Th.U. standard.

Each of these changes were approved by the Dominion Government only after scientific study of changing methods in the manufacture and use of gas had been made by Government officials in collaboration with gas company executives through the medium of the Canadian Gas As-

sociation. Each of these progressive changes was made in Canada a year or two after somewhat similar changes had been made in Great Britain, where most of the gas is made from coal, as in Canada.

The 450 B.Th.U. minimum has remained the standard for manufactured gas in Canada for 17 years. That is a long time when we consider the scientific developments that have taken place in the fuel and lighting business in the meantime. Low-priced electricity, oil, wood, and sawdust have made heavy inroads into our business since 1919. Gas Companies everywhere have been compelled by competition to seek new markets for larger volumes of gas at lower prices or at prices competitive with other fuels. Some companies have developed more of this class of business than others in recent years, depending on the rates they offer and the effectiveness of their sales organizations. Continued intensive competition in the fuel field will make this still more necessary in Canada in the future.

### Due for a Change.

We are due for a change, and the sooner it comes the better for the Industry. More modern regulations have been introduced in other countries since 1919, which have profoundly influenced manufacture and sales. But there has been no modernization of standards in Canada for 17 years, and there are unmistakeable signs that as a consequence the Industry has not made the progress in recent years it should have made.

Think of the progress our competitors have made in 17 years while our gas standards have remained unchanged. Let me give you a local example of what progress our electrical competitor has made in that time. Less than 20 years ago the rate for domestic electric service in Vancouver was 8.8c. per kW, plus 15c. per month meter rental charge. A householder at that time who used 400 kWh per month would have paid $35.35. For the same number of kW's under the recently announced 1c. kW third step-rate, electric domestic service will cost $7.00, about *one-fifth* the cost of 20 years ago.

Before our Company introduced a special gas rate for space heating, if a householder used, say, 25,000 cu.ft. in a winter month for cooking, water heating, and space heating, he would have paid $30.40. Following several reductions in the space heating rate in the meantime and the introduction a year ago of a combination gas rate for cooking, water heating, and space heating, a householder can now buy the same amount of gas for $12.43—about *one-third* the cost of 20 years ago.

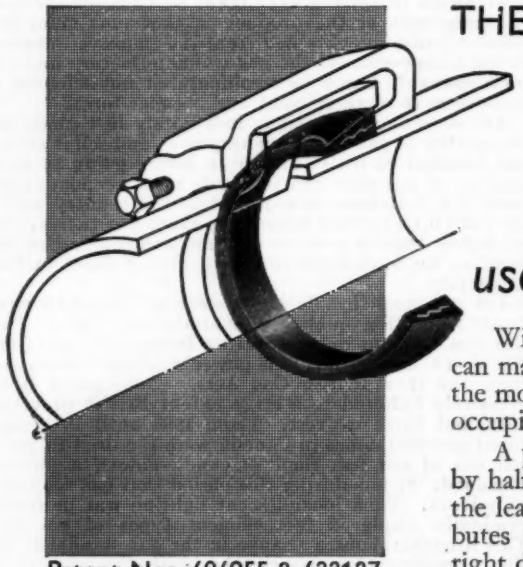
This is a local example, but it shows that electricity as a competitor of gas in Vancouver has done better in the matter of rate reductions for combined lighting, cooking, and water heating than the Gas Department has for combined cooking, water heating, and space heating. Somewhat the same story can be told about reductions in cost of oil, coal, and sawdust when used in the more efficient installations for burning these competitive fuels.

What are the essential differences between the modernized gas standards in Great Britain and the now out-of-date gas standards in Canada?

The " therm " system of charge was adopted by the British Parliament on the initiative of the Board of Trade. Under this, gas companies in Great Britain were required within two years after the passing of the Act to prescribe the time when and the manner in which the undertakers are to give notice of the declared calorific value of the gas which they intend to supply. In short, British gas companies can supply any declared quality of gas providing it is sold on a therm basis. Gas is being distributed in Britain at as low as 250 B.Th.U. and as high as 575 B.Th.U. in different parts of the country. That is how flexible the regulations are there. In Canada since 1919 the gas companies have had to manufacture and sell gas of not less than 450 B.Th.U. and sell it on a volumetric basis. This is not in tune with new gas manufacturing or sales technique.

There are other essential differences between existing Canadian regulations and the more advanced regulations in other countries. I suggest that as this subject is of vital importance to the future of the manufactured Gas Industry in Canada, the incoming Executive appoint a committee to study the question of gas standards with a view to modernization of the Gas Acts.

Anticipating that I would bring this matter before you at this Meeting, I wrote some time ago to Col. W. M. Carr, then President of The Institution of Gas Engineers, asking if he would be good enough to summarize for the Canadian Gas Association his experiences of fifteen years operating under the British Gas Regulations Act, 1920, and subsequent Acts, but unfortunately he was taken ill and has not been able to send me a promised report. I hope to receive it soon, however, and I am going to take the liberty of handing a copy of the communication to the Secretary for future reference and study.



THE **STANTON**
MECHANICAL
**LEAD JOINT**
*uses this pre-cast lead ring*

With an ordinary spanner, an unskilled workman can make this leaktight, trouble-free lead joint under the most difficult conditions in a fraction of the time occupied by lead melting, running and caulking.

A pre-cast lead ring is held positively in position by half-collars secured by cast-iron setscrews. Inside the lead is cast a spring insertion ring, which distributes the end pressure so that the joint is effective right down to the tip.

The completed Joint holds high air and water pressures, and permits " draw " of the spigot and angular distortion.

Patent Nos. 404955 & 433137

No increase in cost of pipeline

**The Stanton Ironworks Company Limited, Near Nottingham**

## Gas Undertakings' Results

### Brighouse.

The report of the Engineer and Manager of the Brighouse Gas Department, Mr. John Corrigan, for the year ended March 31, 1936, states that the gas sent out during the year amounted to 244,889,000 cu.ft. being 19,496,000 cu.ft. more than last year, an increase of 8·6%. The gas sold and used is 236,099,500 cu.ft., being 17,696,200 cu.ft. more than last year, an increase of 8·1%. The gas unaccounted for is 8,789,500 cu.ft., which is 3·59% of the output. This figure, however, requires an adjustment owing to a slight alteration in the dates of collection of the slot meters. This will reduce the gas unaccounted for to 7,489,500 cu.ft., or equal to 3·05% of the total output. Including an equivalent for benzole extraction of 676 cu.ft. the average make of gas per ton of coal carbonized was 14,709 cu.ft. Residuals have yielded 73·6% of the cost of the coal as against 74·6% in the previous year. During the latter part of the year difficulty was experienced in meeting the heavy demand for our graded coke. Alterations are now being made at the Works to provide extra ground space in order to stock more coke, and it is anticipated that our customers' requirements will, in future, be fully met. The new benzole washing and distillation plant is now in course of erection and a larger yield of benzole is expected during the coming year.

### Morpeth.

The Directors' Report on the Morpeth Gas Light Company (1920), Ltd., for the year ended June 30, 1936, states that the gross profit for the year amounts to £3,432, which, with £1,474 brought forward from last year, gives a total of £4,907 available. The Directors recommend that this be dealt with as follows: In writing off for depreciation on meters and cookers £622, in placing to general reserve account £500, income-tax £490, in paying 6% for the year on preference shares £841, less income-tax, £194, £646. Of this, an interim dividend amounting to £326, being at the rate of 3% less tax, was paid in February last. In paying 6% for the year on ordinary shares £1,017, less income-tax £236, £781. Of this, an interim dividend amounting to £329, being at the rate of 2½% less tax was paid in February last. There is carried forward a balance of undivided profits of £1,867. The balance of revenue account, £3,432, shows an increase of £220 over the previous year; this is a satisfactory improvement and indicates that the large expenditure on extensions in recent years is now beginning to bear fruit.

### Stretford.

The annual report of the Stretford and District Gas Board states that the quantity of gas made was 5,453,710 therms actual or 5,387,625 therms calculated on basis of declared calorific value of 500 B.Th.U. per cu.ft. and the quantity of gas sold was 4,968,114 therms, an increase of 958,035 therms, or 23·89%, as compared with the previous year ended March, 1935. The increase in the numbers of consumers is 1,761, or 6·48% during the year. The volume of gas sold during the year was 993,622,900 cu.ft., as compared with 802,015,800 cu.ft. during the year ended March, 1935. The total number of consumers at the end of the year was 28,927, of which 12,976 have ordinary meters and 15,951 have prepayment meters, the increase in the number of consumers during the year being 1,761; of these 375 are ordinary meter consumers, and 1,386 prepayment meter consumers. The gas made per ton of coal carbonized was 72·33 therms (including benzole therms). The quantity of producer gas used for dilution of coal gas was 164,000 cu.ft. The net receipts from residuals amounted to £43,639. Receipts for benzole, including naphtha, were £6,220. Total receipts for residuals and benzole are equivalent to 2·41d. per therm of gas sold compared with 2·53d. per therm last year. The total length of main pipes laid during the year for extensions and improvement of supply was 12,522 yd. The two-part tariff system of charge which was offered to domestic consumers as from Oct. 1, 1934, is being taken up by an increasing number of consumers. At March 31, 1936, agreements had been completed by 5,375 consumers, of whom 2,055 were consumers by ordinary meter and 3,320 consumers by prepayment meter. The total income on revenue account is £225,831 and the total expenditure on revenue account amounts to £176,398. The net result shows a gross balance on revenue account of £49,433, compared with £51,800 in 1935, a decrease of £2,367.

### Wellingborough.

The report of the Directors of the Wellingborough Gas Light Company for the year ended June 30 last states that an interim dividend of £4,686 was paid on March 1, and after providing for interest there remains an available balance of £9,233. The Directors recommend that dividends at the same rate (7½% on the original and 6% on the additional shares, less income-tax) be declared for the half-year, payable on Sept. 2. This will absorb the sum of £4,686, leaving a balance of £4,546 to be carried forward. During the year a further section of horizontal retorts has been replaced by verticals, while the coke conveyor and storage bunkers have also been renewed. It is proposed to increase the capital by the addition thereto of 11,911 ordinary shares of £1 each or such less number as shall be required pursuant to the Company's 1936 Order as consideration for the transfer of the Irthlingborough undertaking, the shares to be issued to holders of the share capital of the acquired Company.

BY APPOINTMENT

CARRON

GAS
COOKING APPARATUS

Carron Company specialise in this section of their business and with their unique organisation and manufacturing facilities are in a position to cope with any demand for this class of goods.

Kitchen of Industrial Canteen fitted with Carron Gas Cooking Apparatus

*Drawings and Estimates Gratis. Gas Cooking Apparatus Catalogue No. 6k, post free.*

CARRON COMPANY
Works - CARRON, FALKIRK
London - 15, Upper Thames Street, E.C. 4

CARRON COMPANY · ESTD PERPETUA · INCORPORATED BY ROYAL CHARTER 1773 · FOUNDED 1759

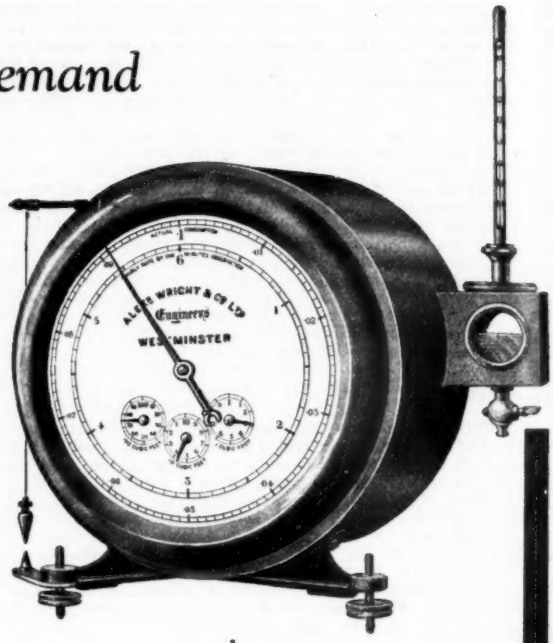
# LABORATORY TESTS *demand*

## ACCURATE MEASUREMENT *of* GAS VOLUME

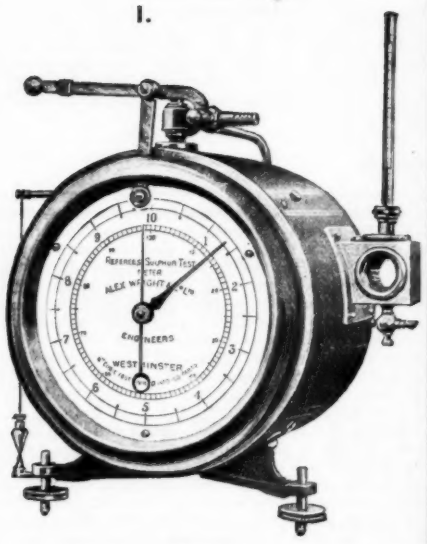
# WRIGHT'S METERS

## *are ACCURATE*

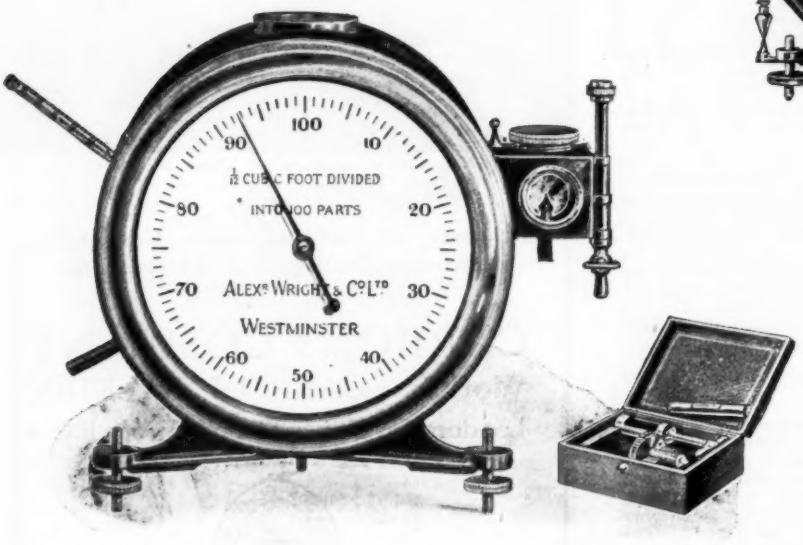
The accuracy and quality of Wright's Meters result from the experience gained over 90 years, and may be judged from the fact of their use by laboratory workers in hundreds of industrial, scientific, and government laboratories, and for such vital services as measurement of air supplies to divers and in physiological investigations.




1.




2.




3.

1. Laboratory Gas Meter: 1/10th cu.ft. to 1½ cu.ft. per revolution (or metric equivalents), with or without indices.

2. Automatic Stop-action Meter: 1/12th cu.ft. per revolution, or to special requirements.

3. "Hyde" Modified Ordinary Meter: As used with Boys' non-recording Gas Calorimeter.

**ALEXANDER WRIGHT & CO., LTD., WESTMINSTER**

# Gas Markets and Manufactures

## Stock Market Report

**(For Stock and Share Lists, see later pages)**

There was a slight falling off in the volume of business on the Stock Exchange last week, but prices generally were well maintained. In the gilt-edged section a feature was the demand for Home Corporation stocks, British Funds remaining quiet but firm, a few closing fractionally higher. Home rails were somewhat patchy, though the continued increase in traffic receipts has largely discounted the reactions brought about by profit-taking, and prices are now very little below the year's highest levels. There were several bright spots in the industrial market, the features being the strength of motor, cement, and brick shares, while Courtaulds also hardened. The holiday season is now nearly over, and with the opening of a new Account this week a return to more active conditions is anticipated.

The Gas Market was quiet with prices continuing steady, and the few changes in the quotations were all in an upward direction. On the London Exchange, Uxbridge ordinary hardened 3 points to 157½, and East Surrey 5% debenture gained a similar amount to 125½, while several other stocks gained 1 point. The international situation brought about a slight reaction in Imperial Continental stock, though the quotation finally closed unchanged. It will be seen that Gas Consolidation ordinary and preference shares are now officially quoted and have therefore been transferred to the appropriate list. In the Supplementary table the feature was a sharp rise of 13 points in Shanklin and Ventnor consolidated to 165-175, business being recorded at 174-174½. A parcel of £200,000 3½% debentures of the United Kingdom Gas Corporation came on the market towards the end of the week and was offered at 100½ free of stamp duty. The stock is payable on Oct. 1. In view of the Corporation's rapid expansion the offer was not unexpected, and a purchase at this price should prove a sound investment.

The net profits of the Metropolitan Gas Company, of Melbourne, for the year ended June 30 amounted to £197,191 (against £221,998). The Directors propose to pay a final dividend of 6s. 6d. per share, making 13s. a share for the year, or 13%, and are transferring £25,000 to reserve against last year's £50,000. The £5 shares have a nominal quotation in London of 10½ and transactions have been recorded during the current month at round about this figure—the yield working out at just under 6%.

## Current Sales of Gas Products

### The London Market for Tar Products.

*Aug.* 24.

There are no changes to report in the prices of tar products, which remain at about the following levels:

Pitch, nominal, at 35s. to 36s. per ton f.o.b.

Creosote, about 5½d. per gallon.

Refined tar, 3¾d.

Pure toluole, about 2s. 4d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, about 1s. 7d.; and 90/160 pyridine, about 5s.—all per gallon naked at makers' works.

### Tar Products in the Provinces.

*Aug.* 24.

The average prices of gas-works products during the week were: Gas-works tar, 19s. 3d. to 24s. 3d. Pitch—East Coast, 33s. to 35s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 33s. to 35s. 6d.* Toluole, naked, North, 1s. 10½d. to 1s. 11d. Coal-tar crude naphtha, in bulk, North, 8d. to 8¼d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4¼d. Heavy naphtha, North, 1s. 1½d. to 1s. 2½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¾d. to 5d.; low gravity, 4½d. to 4¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 2s. 4d. to 2s. 6d. Naphthalene, £21 to £23. Salts, 95s. to 100s., bags included. Anthracene "A" quality, 3d. to 3½d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

### Tar Products in Scotland.

GLASGOW, *Aug.* 22.

Market continues fairly active, although the heavy products are rather uninteresting.

Crude gas-works tar.—The actual value is 34s. to 35s. per ton *ex* works in bulk.

Pitch.—While actual business is scarce, quotations remain unchanged at 32s. 6d. to 35s. per ton f.o.b. Glasgow for export, and 32s. 6d. per ton *ex* works in bulk for home trade.

Refined tar.—Producers are manufacturing according to actual demand and quotations are steady at 3d. to 3¼d. per gallon f.o.r. for export and 3¾d. to 4d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—There is just a normal demand for this and prices are unchanged as follows: Specification oil, 4¾d. to 5d. per gallon; low gravity, 5d. to 5¼d. per gallon; neutral oil, 4¾d. to 5d. per gallon; all *ex* works in bulk.

Cresylic acid.—This continues to be an active product and values are not lower than the following, which, however, can only be taken as nominal: Pale, 97/99%, 2s. 3d. to 2s. 5d. per gallon; dark, 97/99%, 2s. to 2s. 2d. per gallon; pale, 99/100%, 2s. 9d. to 3s. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—Available supplies are changing hands at 5½d. to 6d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 5d. to 1s. 6d. per gallon and 90/190 heavy naphtha is 1s. to 1s. 1d. per gallon.

Motor benzole can only be secured in small quantities at round 1s. 3½d. to 1s. 4d. per gallon.

Pyridines.—90/160 grade is 4s. 6d. to 5s. per gallon, and 90/140 grade 5s. to 5s. 6d. per gallon.

### Benzole Prices.

These are considered to be the market prices for benzole at the present time:

| | s. d. | | s. d. | |
|---|---|---|---|---|
| Crude benzole . . . | 0 8½ | to | 0 9 | per gallon at works |
| Motor ,, . . . | 1 2 | ,, | 1 2½ | ,, ,, ,, |
| 90% ,, . . . | 1 3 | ,, | 1 3½ | ,, ,, ,, |
| Pure ,, . . . | 1 7 | ,, | 1 7½ | ,, ,, ,, |

## Contracts Advertised To-Day

**Pipes.**

Oldham Gas and Water Department. [p. 498.]

## Trade Notes

### Samuel Cutler & Sons, Ltd.: New Telephone Number.

The telephone number of the Providence Iron Works of Messrs. Samuel Cutler & Sons, Ltd., has been changed to East 5231-2.

## Further Gas Undertakings' Results

### Dunfermline.

The annual report by the Engineer and Manager of the Dunfermline Gas Department, Mr. J. Campbell, for the year ended May 15, 1936, states that the income amounted to £74,304, expenditure amounted to £57,180, leaving a gross profit of £17,125. There is a surplus on the year of £845. A sum of £93 was carried forward. The quantity of coals carbonized during the year amounted to 22,868 tons. The quantity of gas made as per station meter amounted to 413,877,000 cu.ft., an increase of 9,751,000 cu.ft., equal to 2·41%. The average yield of gas per ton of coal was 18,099 cu.ft. per station meter, or 18,218 cu.ft. corrected, of an average calorific value of 431·4 B.Th.U. per cu.ft., equal to a production of 78·59 therms per ton. The net income for residual products amounted to £12,465, equal to 10s. 10·8d. per ton of coal carbonized, or 61·15% of the cost, making the net cost of coal 6s. 11·15d. per ton. The total length of new mains laid amounted to 1,300 yd. There was an extraordinary demand for coke during the past winter, and difficulty was experienced in fulfilling orders. Prices are now advanced, and the return from this product during the current year should be very satisfactory. The price of gas supplied for street lighting purposes has been reduced, the new charge being 2s. 3d. per 1,000 cu.ft. for the first 20 million cu.ft. used annually, and 1s. 6d. per 1,000 cu.ft. for the balance. The sale of gas appliances in the showrooms again shows a very satisfactory increase.

### Huntly.

The Huntly Gas Company, Ltd., report a profit for the year to June 30 of £1,293, to which is added the balance brought forward of £4,539, making £5,931 in all. After writing off £522 for depreciation on plant, gas fittings, and buildings, a balance of £5,409 remains at the credit of the profit and loss account. A dividend of 10%, tax free, taking £400, and a cash bonus of 10s. per share, tax free, have been declared, the balance of £3,009, subject to Directors' remuneration, is carried to next year's account.

● *Apply* **SCIENTIFIC CONTROL** *to the best advantage by adopting*

# THE WEST SYSTEMS

## OF MODERN GAS AND COKE PRODUCTION

**The West organization has co-operated with progressive Gas Undertakings in 24 countries in their schemes of works modernization, plant renewal, and extension.**

- **GLOVER-WEST VERTICAL RETORTS**
- **WESTVERTICAL CARBONIZING CHAMBERS**
- **BREEZE-FIRING PRODUCER EQUIPMENT**
- **WASTE-HEAT RECOVERY PLANTS**
- **THE WEST LIP-BUCKET CONVEYOR WITH AUTOMATIC LUBRICATION**
- **COKE GRADING AND PREPARATION UNITS**

Contracts placed with West's Gas Improvement Company, Ltd., during the present year have included carbonizing plant installations for the Gas Undertakings of *Altrincham, *Bilston, *Carlisle, *Dudley, *Worcester, and *Yeadon, in England; *Dumbarton, *Grangemouth, and Kelso, in Scotland; *Ballymena, in Ireland, and *Johannesburg, in South Africa.

* Repeat orders

**WEST'S GAS IMPROVEMENT COMPANY, LTD.**

MANCHESTER: ALBION IRONWORKS, MILES PLATTING — 'Phone: COLLYHURST 2961 : 'Grams: "STOKER, MANCHESTER"

LONDON: COLUMBIA HOUSE, ALDWYCH, W.C.2 — 'Phone: HOLBORN 4108 : 'Grams: "WESGASCO, ESTRAND, LONDON"

MEMBERS OF THE SOCIETY OF BRITISH GAS INDUSTRIES.

# STOCK AND SHARE LIST

## Official Quotations on the London Stock Exchange

| Issue. £ | Stock or Share | When ex-Dividend. | Dividends. Prev. Hf. Yr. % p.a. | Dividends. Last Hf. Yr. % p.a. | NAME. | Quotations Aug. 21. | Rise or Fall on Week. | Transactions, Lowest and Highest Prices During the Week. |
|---|---|---|---|---|---|---|---|---|
| 1,767,439 | Stk. | Mar. 16 | 7 | 7⅛ | Alliance & Dublin Ord. ... | 164—169 | ... | 168¼ |
| 374,000 | ,, | June 22 | 4 | 4 | Do. 4 p.c. Deb. ... | 94—99 | ... | ... |
| 557,655 | ,, | Aug. 10 | 7 | 7 | Barnet Ord. 7 p.c. ... ... | 167—172* | ... | ... |
| 300,000 | 1 | Mar. 30 | 1/4⅛ | 1/9⅛ | Bombay, Ltd. ... ... ... | 1⅛—1⅛ | ... | ... |
| 179,305 | Stk. | Aug. 10 | 9½ | 9½ | Bournemouth sliding scale ... | 217—227* | ... | ... |
| 590,407 | ,, | ,, | 7 | 7 | Do. 7 p.c. max. ... | 168—173* | ... | ... |
| 493,960 | ,, | ,, | 6 | 6 | Do. 6 p.c. Pref. ... | 146—151* | ... | ... |
| 50,000 | ,, | June 22 | 3 | 3 | Do. 3 p.c. Deb. ... | 84—89 | ... | 89 |
| 262,025 | ,, | ,, | 4 | 4 | Do. 4 p.c. Deb. ... | 105—110 | ... | 108 |
| 335,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Deb. ... | 123—128 | ... | ... |
| 357,900 | ,, | Aug. 10 | 7½ | 7½ | Brighton, &c., 6 p.c. Con. ... | 168—173* | ... | 170 |
| 649,955 | ,, | ,, | 6¾ | 6¾ | Do. 5 p.c. Con. ... | 153—158* | ... | ... |
| 205,500 | ,, | ,, | 6 | 6 | Do. 6 p.c. 'B' Pref. | 142—147* | ... | ... |
| 855,000 | ,, | Mar. 2 | 7 | 8 | British Ord. ... ... ... | 158—163 | ... | 162—163 |
| 100,000 | ,, | June 8 | 7 | 7 | Do. 7 p.c. Pref. ... | 151—156 | ... | ... |
| 350,000 | ,, | ,, | 5½ | 5½ | Do. 5½ p.c. 'B' Cum. Pref. | 108—113 | ... | ... |
| 120,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Red. Deb. ... | 95—100 | ... | ... |
| 450,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Red. Deb. ... | 110—115 | ... | ... |
| 200,000 | ,, | ,, | 3½ | 3½ | Do. 3½ p.c. Red. Deb. ... | 97—99 | ... | ... |
| 100,000 | 10 | 22 May '33 | 6 | 4 | Cape Town, Ltd. ... ... | 1—3 | ... | 37/6 |
| 100,000 | 10 | 6 Nov. '33 | 4½ | 4½ | Do. 4½ p.c. Pref. ... | 1—3 | ... | ... |
| 150,000 | Stk. | June 22 | 4½ | 4½ | Do. 4½ p.c. Deb. ... | 80—85 | ... | ... |
| 626,860 | ,, | July 20 | 6 | 6 | Cardiff Con. Ord. ... ... | 128—133 | ... | ... |
| 237,840 | ,, | June 8 | 5 | 5 | Do. 5 p.c. Red. Deb. | 108—113 | ... | ... |
| 98,936 | 1 | Apl. 20 | 2/- | 2/- | Colombo, Ltd., Ord.... ... | 1⅜—1⅞ | ... | ... |
| 24,500 | 1 | ,, | 1/4½ | 1/4½ | Do. 7 p.c. Pref. ... | 20/—22/- | ... | ... |
| 609,204 | 1 | Mar. 30 | -/11·48 | -/11·48 | Colonial Gas Assn. Ltd. Ord. | 18/—20/- | ... | ... |
| 296,053 | 1 | ,, | 1/3·30 | 1/3·30 | Do. 8 p.c. Pref | 22/—24/- | ... | ... |
| 1,775,005 | Stk. | Aug. 10 | 5 | 5 | Commercial Ord. ... ... | 95—100* | ... | 96—97½ |
| 620,000 | ,, | June 8 | 3 | 3 | Do. 3 p.c. Deb. ... | 84—89 | ... | 87½ |
| 286,314 | ,, | Aug. 10 | 5 | 5 | Do. 5 p.c. Deb. ... | 118—123* | ... | ... |
| 807,560 | ,, | Aug. 10 | 7 | 7 | Croydon sliding scale ... | 157—162* | ... | ... |
| 644,590 | ,, | ,, | 5 | 5 | Do. max. div. ... ... | 113—118* | ... | ... |
| 620,385 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Deb.... ... | 123—128 | ... | ... |
| 239,000 | ,, | Aug. 10 | 5 | 5 | East Hull Ord. 5 p.c.... ... | 107—110* | ... | ... |
| 184,555 | ,, | Aug. 10 | 6 | 6 | East Surrey Ord. 5 p.c. ... | 128—133* | ... | ... |
| 176,211 | ,, | June 8 | 5 | 5 | Do. 5 p.c. Deb. ... | 123—128 | +3 | ... |
| 250,000 | 1 | June 22 | 4 | 4 | Gas Consolidation Ord. ... | 20/6—22/6 | ... | 22/—22/1½ |
| 250,000 | 1 | May 18 | 4 | 4 | Do. 4 p.c. Red. Cum. Pref. | 19/—20/- | ... | 19/6—19/9 |
| 19,284,128 | Stk. | Aug. 10 | 5⅜ | 5⅜ | Gas Light & Coke 4 p.c. Ord. | 27/3—28/3a* | ... | 27/9—28/1½ |
| 2,600,000 | ,, | ,, | 3½ | 3½ | Do. 3½ p.c. max.... ... | 89—92* | ... | 90½ |
| 4,477,106 | ,, | ,, | 4 | 4 | Do. 4 p.c. Con. Pref. ... | 104—108* | ... | 106—108 |
| 8,602,497 | ,, | May 18 | 3 | 3 | Do. 3 p.c. Con. Deb. ... | 87—90 | ... | 89½—90½ |
| 3,642,770 | ,, | ,, | 5 | 5 | Do. 5 p.c. Red. Deb. ... | 116—119 | ... | 118¼ |
| 3,500,000 | ,, | ,, | 4½ | 4½ | Do. 4½ p.c. Red. Deb. ... | 114—117 | ... | ... |
| 700,000 | ,, | ... | ... | ... | Do. 3½ p.c. Red. Deb. ... | 103—105 | ... | 104½—105 |
| 270,466 | ,, | Feb. 17 | 6 | 6 | Harrogate New Cons. ... | 130—135 | ... | ... |
| 157,500 | 1 | Mar. 16 | 1/7½ | 1/7½ | Hongkong & China, Ltd. ... | 1⅞—1⅞ | ... | ... |
| 213,200 | Stk. | Aug. 10 | 6 | 6 | Hornsey Con. 3½ p.c. ... | 133—138* | ... | ... |
| 5,600,000 | ,, | May 18 | 8 | 12 | Imperial Continental Cap. ... | 152—157 | ... | 152—155½ |
| 223,130 | ,, | July 20 | 3½ | 3½ | Do. 3½ p.c. Red. Debs. | 92—97 | +1 | 96—96½ |
| 285,242 | ,, | Feb. 17 | 8½ | 8½ | Lea Bridge 5 p.c. Ord. ... | 175—180 | ... | ... |
| 75,000 | ,, | May 18 | †10 | †10 | Malta & Mediterranean | 195—205 | ... | ... |
| | | | | | Metropolitan (of Melbourne) | | | |
| 392,000 | — | Apl. 1 | 5½ | 5½ | 5½ p.c. Red. Deb. ... ... | 102—107 | ... | ... |
| 231,978 | Stk. | Feb. 17 | 5 | 5 | M.S. Utility 'C' Cons. ... | 110—115 | ... | ... |
| 818,657 | ,, | ,, | 4 | 4 | Do. 4 p.c. Cons. Pref. | 103—108 | ... | 105—106½ |
| 360,075 | ,, | June 22 | 4 | 4 | Do. 4 p.c. Deb. ... | 104—109 | +1 | 107½—108 |
| 148,955 | ,, | ,, | 5 | †5 | Do. 5 p.c. Deb. ... | 122—127 | ... | ... |
| 125,000 | — | July 1 | 3½ | 3½ | Do. 3½ p.c. Rd. Rg. Bds. | 97—100 | ... | ... |
| 675,000 | Stk. | June 22 | †3 | †6 | Montevideo, Ltd. ... ... | 68—73 | ... | 69—70 |
| 225,000 | ,, | Aug. 10 | 7½ | 7½ | North Middlesex 6 p.c. Con. | 170—175* | ... | ... |
| 396,160 | ,, | Aug. 10 | 5 | 5 | Northampton 5 p.c. max. ... | 110—115* | ... | ... |
| 300,000 | ,, | Apl. 20 | †9 | †7 | Oriental, Ltd.... ... ... | 165—170 | ... | ... |
| 416,617 | ,, | June 8 | 8 | 8 | Plymouth & Stonehouse 5 p.c. | 168—173 | ... | ... |
| 504,416 | ,, | Aug. 10 | 8¼ | 8¼ | Portsmouth & Gosport Cons. | 170—175* | ... | ... |
| 241,446 | ,, | ,, | 5 | 5 | Do. 5 p.c. max. ... | 110—115* | ... | ... |
| 73,350 | ,, | ,, | ... | 5 | Do. 5 p.c. Pref. ... | 118—123* | ... | ... |
| 114,000 | ,, | July 20 | 5 | 5 | Preston 5 p.c. Pref. ... ... | 110—115 | ... | ... |
| 355,698 | 1 | Apl. 20 | 1/- | 1/- | Severn Val. Gas Cor. Ld. Ord. | 21/—23/- | ... | 22/1½—22/4½ |
| 454,510 | 1 | Mar. 16 | -/10½ | -/10½ | ,, ,, 4½ p.c. Cum. Pref. | 21/—23/- | ... | 22/4½—22/6 |
| 133,201 | Stk. | Feb. 17 | 8½ | 5 | Shrewsbury 5 p.c. Ord. ... | 147—152 | ... | ... |
| 90,000 | 10 | June 8 | †3½ | †4 | South African... ... ... | 4—5 | ... | ... |
| 1,106,173 | 1 | May 4 | 1/2½ | 1/2½ | South East'n Gas Cn. Ld. Ord. | 26/6—28/6 | ... | 27/6—27/9 |
| 845,511 | 1 | Mar. 16 | -/10½ | -/10½ | Do. 4½ p.c. Red. Cum. Pref. | 21/—23/- | ... | 22/6—22/7½ |
| 200,000 | 1 | ,, | 4 | 4 | Do. 4 p.c. Cum. Pref. ... | 20/9—21/9 | ... | ... |
| 450,000 | Stk. | Aug. 10 | 4 | 4 | Do. 4 p.c. Red. Deb. ... | 100—103* | ... | ... |
| 6,709,895 | ,, | Aug. 10 | 6½ | 5 | South Met. Ord. ... ... | 124—127* | ... | 124½—126 |
| 1,135,812 | ,, | ,, | 6 | 6 | Do. 6 p.c. Irred. Pf.... | 145—150* | ... | 147½ |
| 850,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Irred. Pf.... | 103—106* | ... | ... |
| 1,895,445 | ,, | June 22 | 3 | 3 | Do. 3 p.c. Deb. ... | 87—90 | ... | 88½ |
| 1,000,000 | ,, | July 6 | 5 | 5 | Do. 5 p.c. Red. Deb. | 114—117 | +1 | 115¾ |
| 1,543,795 | ,, | Aug. 10 | 6 | 6 | South Suburban Ord. 5 p.c.... | 129—134* | ... | ... |
| 512,825 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref.... | 120—125* | ... | ... |
| 500,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Pref.... | 102—107* | ... | 104½ |
| 888,587 | ,, | June 8 | 5 | 5 | Do. 5 p.c. Deb.... | 121—126 | ... | ... |
| 250,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Deb.... | 102—107 | ... | ... |
| 427,859 | 1 | May 4 | 9½ | 1/2½ | S. Western Gas & Water Ord. | 21 6—23/6 | ... | 23/- |
| 160,523 | 1 | Apl. 20 | ... | -/10½ | Do. 4½% Red. Cum. Pref. | 21/—23/- | ... | ... |
| 110,000 | Stk. | June 22 | 4 | 4 | Do. 4% Red. Deb. ... | 100—105 | ... | ... |
| 647,740 | ,, | Aug. 10 | 5 | 5½ | Southampton Ord. 5 p.c. ... | 111—116* | ... | ... |
| 121,275 | ,, | June 8 | 4 | 4 | Do. 4 p.c. Deb. | 100—105 | ... | ... |
| 350,000 | ,, | Aug. 10 | 5½ | 5½ | Swansea 5½ p.c. Red. Pref. ... | 109—114* | ... | 114 |
| 106,000 | ,, | June 8 | 6½ | 6½ | Do. 6½ p.c. Red. Deb. ... | 98—101 | ... | ... |
| 94,000 | ,, | ,, | ... | ... | Do. 3½ p.c. Red. Deb. ... | 95—100 | ... | ... |
| 1,076,490 | ,, | Aug. 10 | 6½ | 6½ | Tottenham and District Ord. | 148—153* | ... | 153 |
| 409,835 | ,, | ,, | 5½ | 5½ | Do. 5½ p.c. Pref.... | 128—133* | ... | ... |
| 62,235 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... | 120—125* | ... | ... |
| 371,850 | ,, | June 8 | 4 | 4 | Do. 4 p.c. Deb. ... | 102—107 | ... | 105½ |
| 369,774 | ,, | Aug. 10 | 7 | 7 | Uxbridge, &c., 5 p.c. ... | 155—160* | +3 | 157—158 |
| 108,330 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... | 120—125* | ... | ... |
| 1,340,521 | ,, | Aug. 10 | 7 | 7 | Wandsworth Consolidated ... | 157—162* | ... | 162 |
| 1,371,373 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... | 121—126* | ... | ... |
| 500,000 | ,, | ,, | ... | ... | Do. 4 p.c. Pref. ... | 104½—106½* | ... | 105½—105½ |
| 1,317,964 | ,, | June 8 | 5 | 5 | Do. 5 p.c. Deb. ... | 122—127 | ... | ... |
| 338,300 | ,, | ,, | 4 | 4 | Do. 4 p.c. Deb. ... | 103—108 | ... | ... |
| 499,735 | ,, | Aug. 10 | 7½ | 7 | Watford and St. Albans Ord. | 153—158* | ... | ... |
| 200,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... | 120—125 | ... | ... |
| 200,000 | ,, | ,, | 5½ | 5½ | Do. 5½ p.c. Pref. ... | 131—136* | ... | ... |
| 200,000 | ,, | June 22 | 4 | 4 | Do. 4 p.c. Red. Deb. | 100—105 | ... | ... |
| 100,000 | ,, | ,, | ... | 3½ | Do. 3½ p.c. Red. Deb. | 99—102 | ... | ... |
| 158,400 | ,, | Mar. 2 | 5 | 66 | Winchester W. & G. 5 p.c. Con. | 122—127 | ... | ... |

a.—The quotation is per £1 of Stock. b.—Paid £3, including 10s. on account of back dividends. * Ex div.
† Paid free of income-tax. ‡ For year.

**Stock and Share List continued overleaf.**

"Modern Gas Fitting"

PART VI.

of

Gas Fitting Pamphlets

Another of the Popular Series

of reprints, in booklet form, of the articles on "Modern Gas Fitting," contributed monthly to the

"GAS SALESMAN"

by

R. N. LeFevre, M.Inst.Gas E.

Officer-in-Charge of Training, The Gas Light and Coke Company, Assistant Head of Department of Gas Engineering and Supply, Westminster Technical Institute.

*POST FREE PRICES:*

*Single Copies, 6d.; 5/6 a dozen. Quantities of 100 for 35/-, plus carriage*

WALTER KING, LTD.,

11, Bolt Court, Fleet Street, London, E.C. 4

Parts I to V have been reprinted, and can also be supplied.

# STOCK AND SHARE LIST—Cont.

## Stocks Officially Quoted on Provincial Exchanges

| Issue. £ | Stock or Share | When ex-Dividend. | Dividends. Prev. Hf. Yr. % p.a. | Dividends. Last Hf. Yr. % p.a. | NAME. | Quotations. Aug. 21 | Rise or Fall on Week. | Transactions, Lowest and Highest During the Week. |
|---|---|---|---|---|---|---|---|---|
| **BRISTOL EXCHANGE.** | | | | | | | | |
| 347,756 | Stk. | July 20 | 6 | 5 | Bath Cons. ... ... ... | 122½—124½ | ... | ... |
| 1,667,250 | ,, | July 6 | 5 | 5 | Bristol, 5 p.c. max. ... ... | 120—122 | ... | ... |
| 120,420 | ,, | June 8 | 4 | 4 | Do. 1st 4 p.c. Deb. ... | 101½—103½ | ... | ... |
| 217,870 | ,, | ,, | 4 | 4 | Do. 2nd 4 p.c. Deb. ... | 101½—103½ | ... | ... |
| 328,790 | ,, | ,, | 5 | 5 | Do. 5 p.c. Deb. ... ... | 124—127 | ... | ... |
| 274,000 | ,, | Aug. 10 | 5 | 5 | Newport (Mon.) 5 p.c. max.... | 110—114* | ... | ... |
| 13,200 | 12 | Mar. 16 | 7 | 8½ | Pontyp'l Gas & W. 10 p.c. 'A.' | 14—15 | ... | ... |
| 13,600 | 10 | ,, | 5 | 6 | Do. 7 p.c. 'B.' | 11½—12½ | ... | ... |
| 40,000 | 10 | ,, | 5 | 6 | Do. 7 p.c. 'C.' | 11½—12½ | ... | ... |
| 140,778 | Stk. | Aug. 10 | 5 | 5 | Weston-super-Mare Cons. ... | 112—114* | +1 | ... |
| 64,338 | ,, | June 22 | 4 | 4 | Do. 4 p.c. Deb. | 96½—98½ | ... | ... |
| 33,340 | ,, | ,, | 7½ | 7½ | Do. 7½ p.c. Deb. | 163—166 | ... | ... |
| **LIVERPOOL EXCHANGE.** | | | | | | | | |
| 137,150 | Stk. | Aug. 10 | 6½ | 5 | Chester 5 p.c. Ord. ... ... | 107—112* | ... | ... |
| 92,500 | ,, | June 8 | 4 | 4 | Do. 4 p.c. Pref. ... ... | 98—102 | ... | ... |
| 32,540 | ,, | ,, | 3½ | 3½ | Do. 3½ p.c. Deb. ... | 90—95 | ... | ... |
| 41,890 | ,, | ,, | 4 | 4 | Do. 4 p.c. Red. Deb. ... | 99—103 | ... | ... |
| 2,167,410 | ,, | Feb. 17 | 6 | 6 | Liverpool 5 p.c. Ord. ... | 135—137 | ... | ... |
| 245,500 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Red. Pref ... | 103—108 | ... | ... |
| 306,083 | ,, | July 6 | 4 | 4 | Do. 4 p.c. Deb. ... | 104—106 | ... | ... |
| 106,280 | ,, | July 20 | 10 | 10 | Preston 'A' 10 p.c. ... | 198—208 | ... | ... |
| 189,219 | ,, | ,, | 7 | 7 | Do. 'B' 7 p.c. ... ... | 137—147 | ... | ... |
| **NEWCASTLE EXCHANGE.** | | | | | | | | |
| 122,577 | Stk. | Aug. 10 | 8 | 8 | Blyth 5 p.c. Ord. ... ... | 151—153* | ... | ... |
| 732,000 | ,, | Feb. 3 | 5 | 5 | Hartlepool G. & W. Cn. & New | 120—122 | ... | ... |
| 2,061,315 | ,, | Aug. 10 | 5½ | 5 | Newcastle & Gateshead Con. | 27·—27·6a* | +·6 | ... |
| 682,856 | ,, | ,, | 4 | 4 | Do. 4 p.c. Pref. ... | 103—105* | ... | ... |
| 776,706 | ,, | June 22 | 3½ | 3½ | Do. 3½ p.c. Deb. ... | 99—101 | ... | ... |
| 277,285 | ,, | May 4 | 5 | 5 | Do. 5 p.c. Deb. '43... | 103—104 | ... | ... |
| 209,820 | ,, | Aug. 10 | 8½ | 8½ | South Shields Con. ... ... | 171—173* | ... | ... |
| 299,542 | ,, | Aug. 10 | 6 | 6 | Sunderland 6 p.c. max. ... | 127—129* | ... | ... |
| **NOTTINGHAM EXCHANGE.** | | | | | | | | |
| 542,270 | Stk. | Aug. 10 | 10 | 7 | Derby Con. ... ... ... | 174—184* | ... | ... |
| 55,000 | ,, | June 22 | 4 | 4 | Do. 4 p.c. Deb. ... ... | 100—105 | ... | ... |
| 84,750 | ,, | Feb. 17 | 5 | 12 | Long Eaton 'A' Ord. ... | ... | ... | ... |
| 50,000 | ,, | ,, | 4 | 10 | Do. 'B' Ord. ... | ... | ... | ... |
| 20,000 | 10 | June 8 | 5 | 5 | Do. 5 p.c. Pref. ... | 10—12 | ... | ... |
| 80,000 | Stk. | ,, | 5 | 5 | Do. 5 p.c. Deb. ... | 117—122 | ... | ... |
| **SHEFFIELD EXCHANGE.** | | | | | | | | |
| 10,000 | Stk. | Feb. 17 | 10 | 10 | Great Grimsby 'A' Ord. ... | 220—230 | ... | ... |
| 6,500 | ,, | ,, | 10 | 10 | Do. 'B' Ord. ... | 220—230 | ... | ... |
| 79,008 | ,, | ,, | 10 | 10 | Do. 'C' Ord. ... | 205—215 | ... | ... |
| 1,806,339 | ,, | Feb. 17 | 6 | 6 | Sheffield Cons. ... ... | 146—148 | ... | ... |
| 95,000 | ,, | July 6 | 4 | 4 | Do. 4 p.c. Deb.... ... | 99—101 | ... | ... |

*a* The quotation is per £1 of Stock.

## Supplementary List of Stocks and Shares not Officially Quoted

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 202,152 | Stk. | ... | ... | ... | Ascot Ord. ... ... ... | 119—124 | ... | ... |
| 128,182 | ,, | July 6 | ... | 5 | Do. 5 p.c. Pref. ... ... | 115—120 | ... | ... |
| 238,631 | 1 | June 8 | 5 | 5 | Assd. Gas and Water Ord.... | 21/—23/- | ... | ... |
| 323,681 | 1 | ,, | 4½ | 4½ | Do. 4½ p.c. Cum. Pref. ... | 21/6—23/6 | ... | ... |
| 150,000 | Stk. | ... | ... | ... | Do. 3½ p.c. Red. Deb. ... | 99—102 | ... | ... |
| 17,000 | ,, | Feb. 17 | 8 | 8 | Bognor Orig. Ord. 'A' ... | 175—185 | ... | ... |
| 62,210 | ,, | ,, | 8 | 8 | Do. New Addl. 'A' ... | 175—185 | ... | ... |
| 87,160 | ,, | ,, | 7 | 7 | Do. New 7 p.c. max. ... | 145—150 | ... | ... |
| 37,440 | ,, | Aug. 10 | 10 | 10 | Cam.Univ. & Town 10 p.c.max. | 205—215* | ... | ... |
| 125,970 | ,, | ,, | 7 | 7 | Do. 7 p.c. max. ... ... | 155—160* | ... | ... |
| 39,025 | ,, | ,, | 5 | 5 | Do. 5 p.c. max. ... ... | 108—113* | ... | ... |
| 65,000 | ,, | Aug. 10 | 8½ | 7½ | Eastbourne 'A' 5 p.c. ... | 168—173* | ... | ... |
| 198,000 | ,, | ,, | 7 | 6 | Do. 'B' 3½ p.c. ... ... | 140—145* | ... | ... |
| 112,312 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... ... | 118—123* | ... | ... |
| 130,000 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Deb. ... ... | 124—129 | ... | 126½ |
| 24,000 | 30 | Aug. 10 | 8½ | 8½ | Great Yarmouth 8½ p.c. max. | 51—56* | ... | ... |
| 59,400 | 30 | ,, | 7½ | 7½ | Do. 7½ p.c. max.... ... | 42—45* | ... | ... |
| 51,160 | Stk. | June 8 | 5½ | 5½ | Do. 5½ p.c. Deb.... ... | 123—128 | ... | ... |
| 152,600 | ,, | Mar. 2 | 8 | 8 | Guildford Cons. ... ... | 185—195 | ... | ... |
| 54,055 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... ... | 114—119 | ... | ... |
| 68,250 | ,, | June 8 | 5 | 5 | Do. 5 p.c. Deb. ... ... | 120—125 | ... | ... |
| 156,600 | ,, | Feb. 3 | 7½ | 7½ | Hampton Court Cons. ... | 173—178 | ... | ... |
| 107,960 | 10 | Mar. 16 | 4 | 5½ | Mid Kent Ord. ... ... | 10—11 | ... | ... |
| 230,940 | Stk. | Aug. 10 | 10 | 10 | Oxford & District Ord. ... | 205—215* | ... | ... |
| 47,112 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... ... | 118—123* | ... | ... |
| 50,000 | ,, | ,, | 6 | 6 | Do. 6 p.c. Red. Pre ... | 113—118* | ... | ... |
| 126,193 | ,, | May 18 | 7½ | 7½ | Peterborough Ord. ... ... | 160—170 | ... | 174 |
| 64,990 | ,, | Mar. 16 | 6½ | 7½ | Redditch Ord. ... ... | 135—140 | ... | ... |
| 166,850 | ,, | Aug. 10 | 9 | 8 | Romford Ord. ... ... | 168—178* | ... | ... |
| 60,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Pref. ... ... | 97—100* | ... | ... |
| 44,000 | ,, | Mar. 16 | 5 | 5 | Do. 5 p.c. Deb. ... ... | 122—127 | ... | ... |
| 10,950 | ,, | Mar. 2 | 8 | 8 | Ryde Ord. ... ... ... | 165—170 | ... | ... |
| 136,191 | ,, | Aug. 10 | 7 | 5 | Scarborough Ord. ... ... | 126—136* | ... | ... |
| 27,825 | ,, | Feb. 3 | 8 | 8 | Shanklin & Ventnor Cons. ... | 165—175 | +13 | 174—174½ |
| 40,643 | ,, | Mar. 2 | 7 | 7 | Slough Ord. ... ... ... | 147—152 | ... | ... |
| 221,000 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Deb. ... ... | 116—121 | ... | ... |
| 28,872 | 1 | May 4 | 5½ | 5½ | S. Midland Gas Cpn.Ltd. Ord. | 20/—22/- | ... | ... |
| 28,866 | 1 | Mar. 16 | 4½ | 4½ | Do. 4½ p.c. Red. Cum. Pref. | 20/—22/- | ... | ... |
| 137,730 | Stk. | Aug. 10 | 7 | 7 | Southgate & Dist. 7 p.c. max. | 151—156* | ... | ... |
| 62,500 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... ... | 115—120* | ... | ... |
| 117,228 | ,, | Aug. 10 | 6 | 5 | Swindon Cons. ... ... | 110—115* | ... | ... |
| 60,425 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Deb. ... ... | 120—125 | ... | 123½—124½ |
| 64,380 | ,, | June 8 | 5 | 5 | Torquay and Paignton 5 p.c. Pf. | 117—122 | ... | ... |
| 50,000 | 1 | Mar. 30 | ... | 5·52d. *a* | Utd. Kingdom Gas Cpn. Ord. | 21/3—22/3 | ... | 21/6—22/3 |
| 760,910 | 1 | ,, | 2½ | 2½ | Do. 4½ p.c. Prefd. Ord.... | 20/—22/- | ... | ... |
| 110,910 | 1 | May 18 | 2½ | 4½ | Do. 4½ p.c. Cum. Pref. ... | 21/6—22/6 | ... | 22/—22/6 |
| 900,000 | Stk. | Mar. 16 | ... | 3½ | Do. 3½ p.c. Red. Deb. ... | 98—101 | ... | 101½ |
| 130,000 | ,, | Aug. 10 | 8 | 5 | Wakefield Ord. ... ... | 140—145* | ... | ... |
| 81,650 | ,, | ,, | 5 | 5 | Do. 5 p.c. max. ... ... | 105—110* | ... | ... |
| 82,000 | ,, | July 20 | 6 | 6 | Weymouth Ord. ... ... | 105—110* | ... | ... |
| 98,384 | ,, | Aug. 10 | 6 | 6 | Wolverhampton 6 p.c. Pref. | 127—132* | ... | ... |
| 160,000 | ,, | June 8 | 5½ | 5½ | Do. 5½ p.c. Rd. Db | 107—112 | ... | ... |
| 370,000 | ,, | July 20 | 6 | 4 | York Cons. ... ... ... | 105—110 | ... | ... |
| 90,000 | ,, | June 22 | 5 | 5 | Do. 5 p.c. Red. Deb. ... | 103—108 | ... | ... |
| 133,640 | ,, | July 20 | 6½ | 6½ | Yorktown (Cam.) 5 p.c. Cons. | 130—135 | ... | ... |
| 120,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. ... ... | 118—123 | ... | ... |
| 35,000 | ,, | June 22 | 5½ | 5½ | Do. 5½ p.c. Deb.... ... | 130—135 | ... | ... |

*a* Actual.


**Electricity on Gas Works**

by H. C. Widlake, A.I.E.E., Assoc. M.Inst.Gas E.

Students in Gas Engineering should note that the remaining copies of this book are now offered at

**Half Price**

186 pp. Demy 8vo.
Fully illustrated
Bound in red cloth

**10/6**

WALTER KING, LTD.
"Gas Journal" Offices
11, Bolt Court, Fleet St.,
London, E.C. 4

**HICKEY OF LONDON**

Vertical or Horizontal

**BOILERS**

Re-conditioned and Guaranteed

More than

**200**

in stock for Sale or Hire

**GAS USERS**

will be interested in various

**GAS - FIRED BOILERS**

which we have to offer; including a complete range of

**SPENCER - BONECOURT HORIZONTAL GAS-FIRED BOILERS**

and a large number of

**VERTICAL GAS-FIRED BOILERS**

*May we have your enquiries so that we can offer you exactly the Boiler you require?*

**J. HICKEY & SONS**

**121, Sandycombe Road Richmond, London, S.W.**

Telephones: RICHMOND 3080 (Three lines)
Telegrams: "BOILERS KEWGARDENS."